THE RAILWAY GAZETTE
A Journal of Management, Engineering and Operation
INCORPORATING
Railway Engineer · TRANSPORT · The Railway News
The Railway Times · Herapath's Railway Journal · RAILWAY RECORD.
RAILWAYS ILLUSTRATED · ESTABLISHED 1835 · RAILWAY OFFICIAL GAZETTE

PUBLISHED EVERY FRIDAY
AT
33, TOTHILL STREET, WESTMINSTER, LONDON, S.W.1
Telegraphic Address: "TRAZETTE, PARL, LONDON"
Telephone No.: WHITEHALL 9233 (6 lines)

Annual subscription payable in advance and postage free
British Isles and Abroad.....£2 5s. 0d.
Single Copies.....One Shilling
Registered at the General Post Office, London, as a Newspaper

VOL. 69. NO. 13 FRIDAY, SEPTEMBER 23, 1938

CONTENTS

	PAGE
Editorials	507
Letters to the Editor	512
Publications Received	514
The Scrap Heap	515
Overseas Railway Affairs	516
The Development of Aerial Cableways in Austria	519
A Unified Colonial Railway Service ?	520
New 4-6-0 Express Engines for Eire	521
The Rimutaka Tunnel Project, New Zealand	521
Reuse of Worn Rails in Belgium	522
Road Transport Section	523
Railway News Section	531
Personal	531
Centenary Celebrations at Euston	533
Fourth International Rail Congress, Düsseldorf	536
Contracts and Tenders	545
Official Notices	545
Railway Share Market	546

The Centenary Celebrations at Euston

EMPHASIS has been placed by Lord Stamp and others during the past few days on the fact that the celebration of the centenary of the opening throughout of the London & Birmingham Railway should be regarded as a milestone in the story of continuous progress rather than as an antiquarian orgy. This theme of contrasting the ancient with the modern as an exemplification of the enormous progress of the past one hundred years is, in fact, being maintained throughout the exhibition. Members of the public are admitted upon the purchase of the 6d. brochure which we reviewed last week, and this brochure relies for its illustrative effect upon a series of excellent reproductions of famous engravings of one hundred years ago, with a modern photograph of approximately the same scene immediately underneath. Moreover the exhibition of rolling stock leads the interested observer in carefully graded stages through the developments of a century in both coaches and locomotives. From the mechanical side of railway working, the visitor passes upstairs to the shareholders' meeting room to gain some idea of the administrative in the collection of documents and railway companies' seals there displayed; also to learn of the development of some of the less spectacular elements of the railway, such as permanent way and timetables. The opening of the exhibition was performed by the Lord Mayor of Birmingham on Monday, in a ceremony rendered historic, as described on page 533, by a public appearance in steam of the *Lion* locomotive of 1838.

A Timetable Centenary

A point of some interest was made by the Lord Mayor of Birmingham (Councillor E. R. Canning, J.P.) in the course of his remarks, when he formally opened the exhibition at Euston, and stated that among the many contributions to progress with which Birmingham was associated one hundred years ago, not the least was the publication of the first general timetable. It is only within recent months that research by various railway historians has added material to our knowledge of the origin of collated public timetables, and as recently as Tuesday of last week Canon Reginald B. Fellows stated in *The Times* that in his opinion pioneer honours were due to James Drake of Birmingham who produced "Drake's railroad maps of the entire line of route from London to Liverpool and Manchester . . . with the rules, regulations, fares, times of outset and arrival of the trains at the various stations together with all requisite information for travellers," as early as July, 1838. The folding timetable sheet showed the rail times between London and Denbigh Hall and between Rugby and Birmingham; the connecting road-coach link; and details of the Grand Junction Railway and Liverpool & Manchester Railway services. In subsequent issues, further railways were included. Apparently Mr. Drake's efforts were short-lived, however, and the modern collected timetables of course owe more to Bradshaw than to anyone else.

* * * *

The Week's Traffics

Passenger train receipts of the four main line railways for the past week provide some encouragement, although merchandise and coal earnings continue their downward course. The total decrease for the week in comparison with the corresponding week in 1937 is £186,000, following a decrease of £192,000 in the previous week.

	37th Week				Year to date	
	Pass., &c.	Goods, &c.	Coal, &c.	Total	Inc. or Dec.	
	£	£	£	£	£	%
L.M.S.R. ..	+ 4,000	− 81,000	− 15,000	− 92,000	− 1,684,000	− 3·56
L.N.E.R. ..	—	− 55,000	− 17,000	− 72,000	− 1,410,000	− 4·09
G.W.R. ..	+ 4,000	− 22,000	− 8,000	− 26,000	− 798,000	− 4·01
S.R.	+ 10,000	− 5,000	− 1,000	+ 4,000	− 189,000	− 1·18

Comparisons are made in the following table with the figures for the corresponding week in 1936.

	37th Week				Year to date	
	Pass., &c.	Goods, &c.	Coal, &c.	Total	Inc. or Dec.	
	£	£	£	£	£	%
L.M.S.R. ..	+ 8,000	− 59,000	+ 6,000	− 45,000	+ 270,000	+ 0·60
L.N.E.R. ..	—	− 35,000	+ 3,000	− 32,000	+ 238 000	+ 0·73
G.W.R. ..	+ 1,000	− 15,000	+ 3,000	− 11,000	+ 246,000	+ 1·31
S.R.	+ 14,000	− 3,000	− 1,000	+ 10,000	+ 505,000	+ 3·30

Passenger train traffics to date in 1938 are £2,184,000 up in comparison with 1936, and coal receipts show a net increase of £660,500, but merchandise earnings are £1,585,500 down.

* * * *

Three Months' Goods Train Traffics

In the Ministry of Transport statistics of all British standard-gauge railways for the twelve weeks ended June 11, 1938, substantial decreases are shown under all heads of goods train traffic and in the receipts therefrom, compared with the corresponding period of 1937. A general drop in freight traffics had become prominent in March, but even so the mechandise and minerals in Classes 1 to 6 had shown during the twelve weeks ended March 19 an increase of 7·78 per cent. in tonnage and of 9·22 per cent. in receipts. A decisive change in this class of traffic was apparent during the twelve weeks ended June 11, as the 11,652,592 tons then carried were 1,995,680 tons, or 14·62 per cent., less than in the corresponding period of 1937, and the corresponding receipts of £3,109,056 were lower by £371,007 or 10·63 per cent. Coal carryings during the same period were 37,354,404 tons, a decrease of 5,237,559 tons or 12·30 per cent., and the coal receipts

XUM

of £7,248,673 dropped £643,143 or 8·15 per cent. In the earlier twelve weeks a decrease of 0·84 per cent. in tonnage had been accompanied by a rise of 4·27 per cent. in receipts. Higher class merchandise in the earlier twelve weeks had fallen by 3·48 per cent. in tonnage and by 1·38 per cent. in receipts, but in the twelve weeks ended June 11 the fall was considerably more pronounced, as in the 10,646,698 tons carried there was a decrease of 1,383,659 tons or 11·50 per cent., and the receipts of £9,319,164 showed a decrease of £556,786 or 5·74 per cent.

* * * *

Overseas Railway Traffics

The Buenos Ayres Great Southern has lost £22,271 in the fortnight, the increase in the tenth week of £12,159 having been followed by a fall of £10,918 in the eleventh. The Entre Rios, however, continues to show an improvement, having gained £3,624 in the two weeks, so that it is £13,159 up on the aggregate. The Argentine North Eastern has lost £68 in the fortnight, all in the eleventh week, the twelfth showing no change compared with 1937. Central Uruguay traffics have lost £1,196, but are still £8,872 up on eleven weeks.

	No. of Week	Weekly Traffics	Inc. or Decrease	Aggregate Traffic	Inc. or Decrease
		£	£	£	£
Buenos Ayres & Pacific ..	12th	71,030	— 8,561	816,938	— 108,435
Buenos Ayres Great Southern ..	12th	116,749	— 11,353	1,394,790	+ 4,901
Buenos Ayres Western	12th	39,330	— 9,057	425,681	— 111,293
Central Argentine	12th	110,096	— 24,861	1,179,096	— 401,315
Canadian Pacific	37th	699,400	+ 52,800	18,317,600	—1,090,400
Bombay, Baroda & Central India	23rd	224,100	+ 16,650	3,818,700	— 84,525

In the past fortnight Canadian Pacific traffics have shown an improvement of £146,600, thus reducing the decrease on the year to £1,090,400.

* * * *

The Rutland Railroad

The Federal Court of the United States has recently notified the receiver of the Rutland Railroad that it could not permit the operation of the system much longer at its present loss of $2,400 a day. The notification, in the form of a written order, instructed the receiver to distribute copies to employees, officials, shareholders, the Vermont and New York State officials, and all persons interested in a petition to sell or abandon the line. It stated that the reduction of salaries and wages was not within the court's powers, and such a decision would rest with the employees and officials themselves. It was emphasised, however, that the railway was too badly stricken to wait long for such a decision, to engage in a strike or quarrel, or wait for a Labour Board decision. As regards taxes, their reduction or abolition rested with the New York and Vermont officials. Likewise any proposal to reduce the share capital and rate of interest thereon was a matter for the shareholders. The $9,000,000 of preferred and ordinary stock could, however, only be deemed valueless. All the court and receiver could do, the order continued, was to execute the decision of these different groups. Unless, however, the wages and salaries were reduced by at least 15 per cent. and the taxes by about half, the railway, which is over 400 miles long, would be forced to stop operating immediately.

* * * *

An Argentine Resort

Reference to the work of the Buenos Ayres Great Southern Railway in developing Mar del Plata as a holiday resort is made in the September issue of *The Travellers Gazette*, published by Thos. Cook & Son Ltd. It is remarked that only 65 years ago the site of Mar del Plata was a desolate seaboard supporting a small and wandering population, whereas today it is a city with over 50,000 inhabitants and seven miles of beach. Its popularity continues to increase, for last year 21,000 more passengers travelled there than in 1936. The accommodation of the day train services has been improved, gaining an increased patronage that has justified adding to their number. Mar del Plata is 248 miles from Buenos Aires, and the best trains, making one intermediate stop, take slightly under 5¾ hr. An effort is now being made to popularise the resort for winter holidays by running faster services, with Pullman cars, at that part of the year. Some of the Mar del Plata expresses are named after birds, probably with the same idea of suggesting swift and effortless flight as inspired a similar choice for some of the L.N.E.R. streamlined Pacifics. These names have an added attraction when rendered in liquid Spanish, such as Aquila del Mar (sea eagle), and Golondrina (swallow).

* * * *

"Glass Train" Excursions in the Rhineland

Attractive excursion trips have been a feature recently in the Rhineland by the so-called "glass trains," or observation railcars with continuous windows on sides, ends, and eaves, as well as a sliding roof, so affording to the passengers unhindered views of the surroundings. Among the trips advertised by the Reichsbahn, there were three starting from and returning to Cologne, and a fourth having Krefeld as its terminal. A morning run, called the Frontier Excursion, began at 9.10 a.m. from Cologne, reached Aachen at 10.6, left there for Monschau at 2.1 p.m. where it arrived at 3.40. At 6.31 the car left again for Cologne where it was due at 8.41 p.m. The two stops thus allow 4 and 3 hours to view the towns visited. A Moselle Valley trip, leaving at 8.35 a.m. ran *via* Moselkern and Koborn-Gondorf, with similar stops, arriving back at 8.49 p.m., while the Middle Rhine excursion left at the same hour and had stops at Linz, St. Goarshausen, and Kamp, arriving back at 8.58 p.m. The Krefeld car went *via* Montabour, Limburg, and Bad Godesberg, through the Westerwald, and took from 7.55 a.m. to 11.45 p.m. The trips were run on certain advertised days at cheap fares. All were conducted by an experienced guide who explained points of interest, attended to personal comforts as regards meals, &c., and acted on request as guide to the towns stopped at. A selection of gramophone records was carried to enliven the proceedings should passengers feel inclined that way.

* * * *

"A Lesson of General Application"

In the above words does Lt-Colonel E. Woodhouse, in his report issued this week, to be summarised as usual in our columns at an early date, describe the lesson to be drawn from the regrettable accident on May 17 last between Charing Cross and Temple, the first fatal collision on the District Line since January 29, 1876. The origin of the train of events which culminated in the accident was, as was made known immediately after it, the placing of a wire on a wrong terminal in a lever circuit breaker during the replacement of temporary by permanent wiring. The result was to cut out a large part of the track circuit control over a signal, working purely automatically on the day of the accident. Unfortunately the test prescribed by the rules was not applied after the work was done. As Colonel Woodhouse says, the introduction of modern equipment, eliminating the signalman or his mistakes, increases the responsibility of the maintenance staff, a point of great importance in view of the complexity of many new installations, though in this case the circuits were very simple ones. Although there are some technical safeguards for meeting errors made in wiring, thorough

education and practical training, with strict adherence to carefully framed rules covering inspection and other details, must remain the principal basis for the safe functioning of our signalling systems and we have no reason to fear that this is not, as a rule, well appreciated by those concerned.

* * * *

The Metropolitan Changeover

The rearrangement of tracks last Saturday on the Metropolitan Line of London Transport between Finchley Road and Neasden, announced in our issue last week, was achieved with an apparent ease that will rob the board of some of the congratulations it deserves. Passengers in fast trains to Town on Monday morning may have noticed no great change, and doubtless the fact that they entered the new tunnel at Finchley Road escaped the notice of many, one tunnel looking much like another inside. Returning, however, the down fast line is now where formerly was the down slow—a position hitherto observed from fast trains with superior detachment—and this caused some wonderment. The whole work is a source of much interested speculation, and the minimum of annoyance caused by delays. So deeply is the matter pondered that between Harrow-on-the-Hill and North Harrow stations we heard one suburban sage remark that the two new lines to be provided would undoubtedly be laid at the foot of the present embankment to avoid costly earthworks. Only the suggestion that this might necessitate an unusual number of level crossings and two-level stations persuaded him to modify his view.

* * * *

A Case for "Junction Locking"

The accident at Oakley junction, L.M.S.R., on January 21 resembled that at Swanley, Southern Railway, on June 27, 1937, in that irregular acceptance of a train was followed by the very fault against which the infringed regulation was designed to guard. At Swanley, however, it was a special local instruction that was broken. A summary of Lt.-Col. E. Woodhouse's report appears on page 539; it places the principal responsibility for the collision on the signalman. His facing points stood for an occupied line when he accepted the express, intending to reverse them after doing so. He then found he could not, the bolt being held locked "in" by the engine on the branch, which was just foul of a track circuit. The express driver, evidently never expecting a check at this place, doubtless thought the section ahead was occupied, and that he would be allowed to run to the starting signal, the clear line to which was in full view, not thinking for a moment that the points were lying for the obstructed branch. The report makes recommendations on braking, and the placing of signals, but, with a driver under the natural misapprehension this man apparently entertained, the fundamental issue could be met only by the old Sykes's "junction locking" principle, which would have compelled the signalman to set the points for a clear line before he could accept the train at all.

* * * *

Re-use of Worn Rails by Welding

It has long been common practice to use worn rails for relaying on secondary lines, and the development in recent years of the flash-butt process of welding has made practicable the re-use of such rails on a much greater scale. During the International Rail Congress in Düsseldorf, referred to on pages 511 and 536, delegates were given the opportunity to see the process in operation. The work of welding is undertaken for the German State Railway by contractors, to whose works the worn rails are sent, together with full details of the lengths and sections of renovated rails required for particular relaying jobs. The rails received by the contractors are sorted by weight and in accordance with the amount of wear, so that they may be joined to form lengths of consistent section. Side-worn rails are joined to present the unworn side to the wheel flanges. Before welding, the rail ends, if they are at all battered, are cropped; and after welding the rail is cut in the middle in order that a perfect fished joint may be obtained. At the works of Theodor Wuppermann, one of the Reichsbahn contractors, visitors to the congress were duly impressed by the neatness of the organisation, the speed with which the whole process was carried out—sorting, cropping, welding, cutting and drilling for the new fished joints, and grinding down the weld upset—and the labour-saving plant which reduced the number of men employed to surprisingly small proportions.

* * * *

Locomotive Boiler Plate Corrosion

Investigations of the causes of corrosion in locomotive boilers are taking place in the United States, under the auspices of the Water Service Committee of the American Railway Engineering Association. The work has demonstrated conclusively that there is a real possibility of intergranular corrosion in steel boiler plates under tension, and that this can be caused by exposure of the plates to the pressure of extensive concentration of certain salts in boiler water. It has been further demonstrated that caustic soda, which is the chemical usually maintained in boiler water to prevent scale and corrosion, will not cause intergranular corrosion except at excessive concentration and not then until silica or some co-related element is present. Another finding is that sodium sulphate does not afford protection against the type of corrosion referred to in locomotive boiler service, even when present in amounts greatly exceeding the recommended sulphate-alkalinity ratio of the A.S.M.E. boiler code. A conclusion arrived at is that none of the common inorganic salts generally available will afford appreciable protection against intergranular corrosion of steel under tension. The importance of the matter is represented by the fact that the losses through boiler plate corrosion in the United States as a whole amount to figures in excess of $500,000 (£104,166) a year.

* * * *

The Spendthrift Shamed

On taking out a monthly season at a London suburban railway station the other day, we were informed that the celluloid cases in which these tickets were formerly enclosed are now issued only to purchasers of the more opulent quarterly article. At one time the cases were advertised at a penny for all who cared to buy them. By a subsequent change of policy, the proferred penny was grandly waved aside, and the season purchaser of either denomination saw the booking clerk insert his ticket into its transparent sheath with a magnificent gesture, free, *gratis*, and for nothing. Today, while old customers may still be unofficially obliged, the administration guards against sentimentality as effectively as it can by making the monthly ticket of such a size that it can be squeezed into the case only with difficulty, but once inside advertises its unworthiness to occupy so splendid a container by falling somewhat short of it in one dimension. In this way the improvident traveller who has not put enough by to pay for a quarter's transport at one time is properly made to advertise his own wretchedness, to the enormous encouragement of thrift and furtherance of homely virtue.

XUM

New York Rapid Transit

WHAT are usually referred to collectively as the rapid transit systems of New York City comprise an elevated railway undertaking—the "L"—owned by the Manhattan Railway Company, and three main underground (or subway) systems, namely, the Interborough, the Brooklyn-Manhattan, and the Independent. Elevated lines constituted the first attempt to remove urban passenger traffic from the streets, and the first section of the "L" was opened as long ago as 1868, or five years after London had taken the first step towards the same objective by the opening of the Underground between Paddington and the City. During the days of steam operation the nuisance to frontagers must have been very considerable, and even electrification in the 1902-3 period failed to make the service popular. The oldest subway line is that of the Interborough Rapid Transit Company, which was built in 1900-4 at the cost of the Municipal authorities and leased to the company; the system has since been extended considerably on a generally similar basis. The Brooklyn-Manhattan Transit Corporation's original lines date from a decade later, and the so-called "Independent" subway was built by the New York Board of Transportation (created by the Legislature in 1924) and operated as a separate unit. For many years past the "L" has been leased by the Interborough organisation, but ownership has remained with the Manhattan Railway Company.

Complete municipal ownership and operation of all the rapid transit lines is an old-standing political scheme, and may become an actuality in the near future, while demolition of the "L" has long been the goal of numerous Manhattan civic groups, and the two aims now seem to be coming together as separate features of one comprehensive scheme. In May last, for example, it was reported that demolition of the Sixth Avenue elevated line might soon take place as the result of an agreement between officials of the Manhattan Railway and the city authorities reported to have been reached, whereby the city would pay the company $12,500,000 for the line. From this sum the city would make deductions, chiefly $7,190,725 in back taxes, and the actual price to be paid in cash would be $3,874,475. Both the Manhattan Railway and the Interborough Rapid Transit Company are in receivership, and the city had previously instituted proceedings against the Manhattan Railway on a tax claim. Then on June 18 the Federal Court ruled that the receiver for Interborough Rapid Transit might repudiate the lease of the Manhattan Railway on the grounds that the lease was burdensome in requiring the Interborough to pay interest and taxes despite decreasing revenues. This decision was immediately hailed as strengthening the position of Interborough Rapid Transit securities in any possible reorganisation or sale to New York City, as against Manhattan issues.

The Manhattan Railway, however, objects to the decision, and seeks to operate its own lines, and also to push its claim against the Interborough for damage to the property. The Court refused to cancel the contract with the City authorities for the joint operation by Interborough and Manhattan of certain lines, and the next move was a claim by the Manhattan Railway to charge higher fare charges, as it is not now bound by the Interborough 5 cent fare contract with the City authorities. The position of the Manhattan Railway made a further change on June 30, and the doom of New York's elevated railways was apparently sealed, when New York City bought tax liens totalling more than $8,000,000 that had accumulated against the Manhattan Railway Company. In so doing it opened the way to foreclosure proceedings. If these are successful in transferring the properties to the city, as they are expected to be, most if not all the elevated railways will be demolished. Operating figures of the Interborough during the past year have just been revealed by the report to June 30 last submitted by the receiver appointed by a District Court of the United States. This shows gross operating revenue of $52,711,967 (against $54,799,020), and operating expenses at $37,993,907 (against $35,713,278), leaving a net operating revenue of $14,718,059 (against $19,085,742); taxes are $4,657,907 (against $4,308,318); and income from operation $10,060,152 (against $14,777,424). The net operating loss is $8,818,020 (against $4,764,383). After adding the deficit at the beginning of the year $15,423,998 (against $10,709,147), and making sundry small adjustments, the deficit at the end of the year is $23,682,369 (against $15,423,998).

* * * *

Northern Ireland Transport Board

A TOTAL loss of £162,229 on the second year of working of the Northern Ireland Road Transport Board, from October 1, 1936, to September 30, 1937, is revealed in the annual report and statement of accounts. The accounts for the first year showed a debit of £94,048, so that from the board's inception in October, 1935, to the end of September, 1937, the loss has been £256,277. The actual operating loss during the period under review was £70,040, after £133,106 had been charged to depreciation, but interest liabilities brought the total loss to £162,229. It is emphasised that the passenger-carrying services are on a profit-earning basis, but that the board does not see any prospect of establishing the freight undertaking on a sound footing until steps are taken to amend the Act. No adjustment has been made in the accounts for the year in respect of the pooling scheme with the railways established under the Act, as the balance has not yet been finally ascertained. It is not expected, however, that there will be any liability on the board under this heading when the figures are ascertained.

One of the chief reasons given for the operating loss is the activity of "pirates," who are stated to have purchased new vehicles with money received from the board for their old undertakings, and to have entered into nominal partnerships with traders and carried on business as usual in opposition to the board's freight services. The loss to the board caused by pseudo-traders is estimated by an official at over half a million pounds annually. A second cause put forward for the loss is that the board has had to make provision for the useless or redundant vehicles which had to be taken over. Depreciation has been provided for these vehicles. The abnormal expenditure arising from acquisition is assigned as a third reason for the loss.

The board has provided £133,106 for depreciation, and after adding an amount of £96,666 brought forward from the previous year, less £21,383 charged during the year under review, the depreciation reserve account shows a balance of £208,389. The working loss of £70,040 compares with an operating loss of £40,838 for the first year, when the acquisition of the freight services had not really begun, and the total loss of £162,229 compares with £94,048 in 1936. Traffic receipts for the year under review totalled £781,634, against £676,731, the current figure including £607,989 for the passenger services, compared with £608,416, and £173,645 for goods transport, against £62,465. Working expenses, including depreciation, of omnibuses and coaches amounted to £534,866 and of goods vehicles to £219,018. General expenses were £97,790, making a grand total of £851,674 and a working

loss of £70,040. Interest payments amounted to over £87,000, and with miscellaneous charges brought the total loss to £162,229.

Mr. D. L. Clarke, Chairman of the board, stated in his report that the average taxed fleet employed during the year under review was 402 vehicles, compared with 446 in the previous year, while the maximum taxed fleet was reduced from the previous year's figures of 578 to 475, a reduction of 103 vehicles, or almost 18 per cent. The total mileage run during the year was almost 14½ million, while the total number of passengers carried was 29,681,708, an average daily movement of over 81,000 people. In co-operation with the Ulster Tourist Development Association and the railway companies, and by personal canvas, efforts have been made, with good results, to promote the visiting of Ulster by parties from Great Britain, and the board has assisted in the organisation of numerous parties, both large and small, from cross-Channel centres.

* * * *

The Steel Rail

EVERY year the aggregate consumption by British railways of steel rails amounts to between 200,000 and 250,000 tons. In monetary terms, at present prices, this represents an annual expenditure of over £2,000,000. If these figures be multipled to represent the rail consumption of the Continent of Europe, and still more that of North America and the world in general, it is clear that the production, the physical characteristics, and, in particular, the wearing capacity of the rail present a problem which is deserving of the closest attention and study. It was with this object in view that in 1929 there was convened at Zurich, in Switzerland, the first International Rail Congress, which has since been held at intervals of three years, and has attracted wide interest and participation in Continental countries, very few of which have hitherto been without representation. During the past week the Fourth International Rail Congress has been held at Düsseldorf, Germany, and, as is shown by the summary of the papers which appears on page 536 of this issue, the proceedings have reached a high level of interest. In particular they witness to the scope of the research that has been devoted to the rail problem, and to the considerable improvement which has been, and continually is being effected, not only in the production of special rail qualities for specially difficult locations, but in the quality of the ordinary rail.

The fear has sometimes been expressed by short-sighted manufacturers that a material improvement in rail quality would mean less rail consumption. Actually, as every permanent way engineer is only too well aware, the problem in these days of rapidly increasing speeds, trainloads, and frequency of service, is that of keeping pace with these conditions, and preventing a progressive shortening of the life of rails, rather than attempting to obtain any substantial increase. It is not without significance in this connection that the International Rail Congress should have had its origin in Switzerland, at a time when the effects of extensive electrification of main routes with extremely steep gradients and sharp curvature was beginning to make itself seriously felt in track wear—in itself a reminder that in any improvement of train services, whether by electrification or by the introduction of more powerful steam locomotives for purposes of acceleration or increased weight haulage, and even in such details as additions to the comfort of passengers which demand heavier rolling stock, the permanent way shares with the operating and rolling stock departments of a railway in meeting the cost involved.

It was also fitting that some of the most valuable and comprehensive contributions to the congress were made by Swiss engineers, and in particular one paper which, as an outcome of intensive research, not only reviewed all the manufacturing conditions essential to securing a maximum of rail wearing capacity coupled with freedom from brittleness, but also how the working out in practice of those conditions had secured a sixfold increase of rail life on the test-length of the Gotthard route in which these trials have been made. That most manufacturers take a longer view than that expressed at the beginning of the last paragraph is clear from the tribute paid in this paper to the helpfulness of manufacturers in carrying into effect the findings of this investigation. Although not all the research described in the papers has had a practical outcome, reminders are constant of the way in which the findings have influenced permanent way practice. On the Reichsbahn, for example, systematic study of broken rails and tabulation of the conclusions, has, by the application of the knowledge so obtained to the causes of failure—whether in manufacture or in use—resulted in a considerable reduction in the frequency of breakage.

Attention is directed to the unnecessary diversity of rail specifications in different parts of the world, and a plea is entered for a greater uniformity, which would be in the interests of both manufacturers and users, and might influence price also. Rail corrosion and welding problems are reviewed, also special types of rails, such as the sorbitic, the compound cast, the heat-treated silico-chromium, and the high manganese pearlitic steel made in an electric furnace, which have given exceptionally good wear results. A striking improvement in ordinary rail steel quality, secured as a result of research which benefits the manufacturer and has been of no increased cost to the user, forms the subject of the only British contribution, of which a summary will appear next week. The wide area covered by the papers is briefly reviewed on page 536 of this issue, and testifies to the value of a congress which might well receive better support from Great Britain in the future than it has done hitherto.

* * * *

"Enclenchements de Transit"

AN interesting article in the August issue of the *Revue générale des Chemins de fer* by M. Lemonnier, formerly Traffic Superintendent of the French State Railways and now Engineer-in-chief in the Traffic Department of the national system, deals with the problems associated with the provision of electric track circuit locking for holding the road in advance of a train, at mechanical or power interlockings. The "*enclenchement de transit,*" as it is called in France, has been widely applied to the route lever power systems so generally used in that country and attracted much attention before track circuit was seriously considered for the purpose. An early and remarkable example was seen in the low pressure pneumatic route lever installation opened at Ermont, on the Nord, on May 19, 1904, in which locking bars, operated by air cylinders in conjunction with the well-known Aubine wheel treadles, prevented any alteration being made to a route until the last wheel of a train had cleared the zone governed by a signal. Seven passenger train routes were so protected. With the adoption of electric route lever systems the practice of maintaining a route locked throughout, without any sectional release, was generally followed, but M. Lemonnier shows that traffic requirements have necessitated the use of the sectional principle in recent years and that this can be done equally well with the route as the individual lever system, as has indeed now been found in this country also.

XUM

LETTERS TO THE EDITOR

(The Editor is not responsible for the opinions of correspondents)

Timetables

56, St. Mary's Mansions, W.2
September 17

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—We are reading everywhere of the setback in rails, and interim dividend announcements make it only too probable that mileage cuts may be a necessary economy in the near future. There is little fear, of course, of the passenger services being allowed to drop back to the level of the years immediately following the grouping, but surely this is the time to see whether a real pooling and spread-over of passenger train facilities might not improve the services and save mileage on parallel routes. The attitude of the grouped railways to pooling—as affecting passenger trains—has been peculiar. On one hand we have seen a marked disinclination to make the most use of new trains, for fear lest their sphere of influence might extend into the territory of another group, and on the other we find costly efforts being made to improve services which are, frankly, competitive, without any apparent regard to the facilities already offered by parallel routes, while some of the alterations made for the winter (as announced on page 497 of your September 16 issue) still seem to have been drafted on the old competitive lines. We know the "official" objections to any pooling of train services, and we appreciate the fact that the necessary timetable revision would be no light task, but surely travellers and shareholders may fairly urge that, as circumstances call for economy, a real effort should now be made along these lines?

Yours, &c.,
R. E. CHARLEWOOD

13, Flodden Road,
Myatt's Park, London, S.E.5
August 22

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—Your leading article in the issue of August 19 is timely and excellent, and in its final part hits the nail on the head. In answer to your request for expression of opinions, may I be allowed to say the following?

The nationalisation of railways will come, and then one single timetable book will have to be issued; so why not consider already some of the difficulties, and investigate whether their solution would bring about improvements and a reduction of costs? Some people say it cannot be done in one book; if they pack the present four books into one volume of course not!

In giving consideration to the problem, there are many questions that arise. Six of the principal ones are:—

(1).—What can be eliminated?

(2).—How can the area-size of a given text be reduced to a minimum?

(3).—What paper seems to be the best for this special purpose?

(4).—What size?

(5).—What additional information to that given at present should be incorporated?

(6).—How can production costs be reduced?

Before dealing with these questions, may I go back to that part of your leader where you refer to the L.M.S.R. timetable, page 145, with three parallel columns with three trains that "converge triumphantly at Crewe on the same track at 6.48 p.m. . . ."? But this matter ceases to be a joke when one considers the following: The Coronation Scot leaves Glasgow Central at 1.30 p.m., limited accommodation, extra booking fee (usually fully booked many hours before departure). Why should a passenger who comes after "full" booking, or who wishes to avoid the booking fee, not be allowed to travel by the 1.35 (this is the train in the third converging column), arriving in Crewe 6.48, from there on to London (Euston), arriving 9.35 p.m., which is the arrival time for the two other "converging" trains? This London connection is not shown anywhere, neither on pages 43, nor 104, nor 145, nor 599. Why not? This 1.35 p.m. is the last day train from Glasgow to London. The previous one is 10.40. No wonder many people prefer the 3.15 from Queen Street, arriving King's Cross at 10.30 p.m.!

The travelling public is certainly entitled to believe that by now in the various timetables the same symbols would be used to indicate the same thing. Let us see: "Saturday only": "S"; "SO". "Saturday excepted": "SE"; "SX"; "Q"; "G"; &c. The indication of "a.m." and "p.m." is as follows: L.M.S.R.: "a thin line between the hour and minute figures indicates p.m."; L.N.E.R.: "am" and "pm" and "ngt" above the columns, in the columns, and in notes; G.W.R.: "am" and "pm" above and in the columns; Southern Railway: "morn," "morning," "non," "aft," "afternoon," "evening," "night," "ngt."

For reference to local tables in the L.M.S.R. you are referred to "Page"; in the L.N.E.R. to "Table."

Simple matters like the foregoing, one would have thought, would have been standardised by now; but there is an even more astounding matter. If I am not mistaken the four principal companies are known as "L.M.S.," "L.N.E.R.," "G.W.R.," and "S.R." At least the man in the street believes so. But the railway companies themselves do not seem to be quite sure about it! In the L.M.S.R. book alone, for instance, we can find: "G.W.," "G.W. Line," "G.W.R.," "G.W.Ry.," "L.N.E.," "L.N.E.R.," "L.N.E. Line," "L.N.E. Railway," "L. & N.E. Line."

The question of notes comes under Question 1. Referring to notes you give already an example from the G.W.R.; but there the notes are on the same page as the timings. Against that see the L.M.S.R. book. Take for instance the May edition. For the section Euston—Crewe and return there are 317 notes tucked away on separate pages not facing the timings. On page 71 there is for instance "Oldham (Clegg Str) . . . 11ucc15." This is a p.m. timing without a thin line between the hour and the minutes (one of hundreds). Now you want to know what "ucc" stands for. But there is nothing on that page that looks anything like it. Then you find at the bottom, "For connectional trains . . ." What is a connectional train? Surely "connecting trains" is not such a mouthful? Then it goes on, "For Notes see page 76a." You turn to page 76a. Amongst a bewildering mass of notes you fail to find "ucc." There is no such note. You then have a guess that it may mean "u" and "cc" and you find this: "u Oldham (Mumps). Passengers cross from London Road to Victoria station, Manchester, at their own expense," and "cc on Saturdays arrives Oldham (Mumps) 11.6 p.m.," that is 9 minutes earlier. After finding the note you have lost the page with your train! It is suggested that in this one note alone five words could have been saved.

There is a tremendous lot that can be eliminated. Take for instance the SO trains running a few minutes later than the SX or SE trains. Omit this later train (unless necessary) altogether, saving a train column and many notes. Also try and bring the "one day only" trains more in line with the ordinary traffic. Then cut out rigorously the texts in the train columns. They are a nuisance to the compositor and in consequence are very expensive in space and in money.

Then cut out whole columns of trains that run on certain days a few minutes later. See for instance the present L.M.S.R. book, page 74, where the two columns Euston dep 8.35 can be saved against one extra note for Coventry in the previous column. The present Coventry times read: 9R17; 9R42; 9R42; 9R42. "For Notes see Page 81." There,

running one's eye down the list on the page, one cannot see an " R "; we then, perhaps, think it may mean " restaurant car "; but eventually the " R " is found on the right, meaning " via Rugby."

Cut out trains for which there seems no necessity; take for instance the excellent L.N.E.R. Main Line London to Scotland table, page 34. Notwithstanding, it seems that at least the following could be eliminated without any loss to usefulness:—

London 5.2 p.m. to Grimsby; London 7.45 to Peterborough; Grantham 10.55 to Doncaster; Cambridge 9.0 a.m. to Scarborough; London 8.45 to Huddersfield; Cambridge 9.0 a.m. to Liverpool.

Page 36, London 10.15 to Hull; Grantham 12.22 to Manchester; London 10.40 to Peterborough; Newcastle 3.53 could go into Column 1; Leeds 4.0 to Darlington.

Page 38, London 1.30 to Hull; London 1.40 to Whitby; London 1.43 to Peterborough; London 3.0 to Lincoln; Cambridge 2.4 to Grantham.

Page 40, three trains London to Hull; two trains Lincoln to Huddersfield; Cambridge 4.15 to York.

The foregoing make a total of 22 train columns less, or practically speaking in one table in one direction only a saving of two pages.

Question 2.—How can a given text-area be reduced in size without sacrificing legibility, but possibly improving it? By using smaller type, scientifically designed and thereby appearing much larger than it really is. This is what I did when designing the L.P.T.B. bus, tram and Green Line maps. It may astonish many that a 3¼ point figure and letter can be cut for timetable work and be easily read. Station names should be in all-capitals. Then standardised signs should be used for many matters.

Question 3.—The paper is very important. It should be just heavy enough to go through a fast running rotary press without tearing; it need not be high class paper, because a timetable need not last for years. Its colour also is important, as much depends thereon for readability.

Question 4.—What size? To go into your overcoat pocket when folded. It is not much use trying to fold the L.M.S.R. or the L.N.E.R. books, and certainly not if they were combined in their present form. So clearly a different size is indicated, and that will have to be a larger size page.

Question 5.—What additional information seems useful? Mileage; third class single fares between at least the 70 to 80 principal places; small town plans of places with more than one station; and, especially, a good index.

Question 6.—How can production costs be reduced? By having the bulk of the book machine-set and not hand-set. By rigid standardisation. All cross references and the index to have table numbers, not page numbers. This may possibly seem trifling, but it would mean a very considerable saving. For instance, the respective numbers of pages in the present book and in the previous book are: L.M.S.R. 791 and 626; L.N.E.R. 482 and 462; G.W.R. 255 and 251; the total number of full page-length index columns that have to be altered are: L.M.S.R. 92; L.N.E.R. 69; G.W.R. 38. In the L.M.S.R. this represents something like 12,000 figures in the Index alone. Which means that it has to be re-set every time, whereas if table numbers were used it could stand. This would save: (*a*) clerical work altering 12,000 entries and checking same; (*b*) printer altering or preferably re-setting the index; (*c*) proof reading; (*d*) checking in the timetable office. These items translated into money and added up come to an appreciable amount. A further considerable saving can be effected by the rigid elimination of unnecessary trains, and so on.

On this question of timetables one could go on writing. The introduction of the 24-hr. system would also effect savings in space and labour. The many prolific shouters in opposition certainly do not have the faintest idea what saving to the railway companies this 24 hr. would mean. They probably do not know that not only public timetables are printed, but also expensive working timetables for the staff.

Why is it then that so little progress seems to have been made? Is it prejudice, or as I have heard it whispered vested interests? To me personally it is most gratifying to see that a number of ideas I put forward ten years ago are now being gradually adopted in the companies' timetables, and if imitation is the sincerest form of flattery, I shall be happy in the thought that perhaps also this letter may assist in the obtaining of better timetables at reduced cost to the companies.

Yours truly,

W. R. MANSFIELD,
Lt.-Colonel.

[Lest Colonel Mansfield be accused of inconsistencies in the contractions which he uses for the four main-line railways (LMS; LNER; GWR; S.R.), we should point out that in printing his letter we have adopted our standard contractions, excepting where the writer is specifically drawing attention to some particular form of contraction.—ED. *R.G.*]

A Scenic Route to the Cardigan Coast

London, W.6
August 20

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—Having recently made a tour by rail through the Upper Wye valley in Central Wales, and with vivid recollections of its wild and magnificent scenery in my mind, I am rather mystified as to why this splendid attraction to the tourist has received so little publicity from the G.W.R.

At present the district seems to have no convenient connection with the centres which might be expected to provide it with a profitable tourist traffic; for instance, Birmingham and London. To rectify this, would it not be possible for the company to extend one of the through Paddington—Hereford services (either *via* Gloucester or Worcester—preferably the former) over the old Midland Railway line through Hay to Three Cocks, thence over the Mid-Wales line through Builth Wells and Rhayader to Moat Lane and forward to Barmouth or Aberystwyth? Using this route the superb valley of the Wye would be followed from Ross or Hereford almost to the river source in the heart of wildest Wales. Through coaches from Birmingham could be picked up at Worcester or Hereford (probably these could use the existing Birmingham—Worcester—Hereford service), but these need proceed no further than Moat Lane, as, though the proposed new route would add only 15 or so miles to the journey from Paddington to the Cardigan coast as compared with that *via* Birmingham and Shrewsbury, it would of course be far too circuitous from Birmingham itself.

At present the Associated Motorways run what I believe is a very successful motorcoach service between Cheltenham and Aberystwyth through much of this district. It is not too much to hope that the G.W.R. with all its resources in the way of advertising and travel amenities could succeed in working up quite a profitable seasonal tourist traffic.

Until the attractions of this route become better known perhaps one of the diesel railcars could provide a connection from Gloucester or Hereford. At Eardisley, between Hereford and Hay, connection might also be made with Kington, Presteign, and New Radnor, three charming little towns at the foot of Radnor Forest on the Welsh border.

Yours faithfully,

" VITESSE "

Beira and Rhodesia Road Services

According to the annual report of the Beira and Rhodesia Railways for the year ended September 30, 1937, the route mileage of the road motor services operated by the company was 1,629 miles, compared with 1,716 miles in 1936. Of the 44 vehicles in service, all were Thornycroft lorries, except one Morris lorry, one Dodge lorry, and one Thornycroft passenger coach. The total mileage run during the period was 522,461, with a revenue of £51,107 and an operating expenditure of £53,340, thus showing a deficit of £2,333, against a profit in the previous year of £463. The loss was due mainly to the incidence of increased provision for depreciation, additional vehicle tax, and cost of alterations made necessary by new road legislation in Southern Rhodesia. Some 38,453 tons of goods and 34,557 passengers were carried, as compared with 32,523 tons and 22,283 passengers in 1936.

XUM

PUBLICATIONS RECEIVED

"The Times" London Midland & Scottish Railway Centenary Number. 24½ in. × 18½ in. 28 pp. A supplement issued *gratis* with *The Times* of Tuesday, September 20.—For many years past it has been the practice of *The Times* to issue special supplements in connection with important national events, and it was to be expected therefore that the centenary celebrations which are being held at Euston this week would not pass without being marked in this manner. Although issued in connection with an historical occasion, it has been emphasised by Lord Stamp and others within the last few days that the event is regarded as a milestone in a story of continuous progress, so progress rather than early history is the keynote to this supplement. The leading article points out that "The century of railway history that has passed since the first train, encouraged by the blessing of an eminent schoolmaster and the patronage of a prince of the blood, sped along the line between London and Birmingham has brought with it a fantastic array of changes." This leader continues by remarking that it is not unfair to say that the development and progress of English railways have been more remarkable than their discovery. In view of this theme it is of comparatively minor importance that the historical references are not invariably accurate. For example, it is stated that the London & Birmingham Railway was "the first railway of any length" and "the first railway in London." The former statement does less than justice to the Grand Junction Railway, and the latter to the London & Greenwich Railway. Apart from such small points, however, this supplement gives an excellent account of the inception of the railway and of the tremendous changes which have been made within recent years.

A contribution by Lord Stamp points out that railway activity in all its branches arrests the interest of the man in the street and the student of human nature, as well as of the civil and mechanical engineer, and he remarked quite truly on how diversified is the daily life of the railway and how closely it is linked to the trade and commerce of the country. Few will fail to agree with him when he says that in these pages even the young schoolboy, the student, and the "old boy" looking back or gazing ahead will find much to instruct and enthral. This remark is followed by the suggestion that it would be a novel and effective feature in a liberal education if schoolmasters would take this special number as an item in their future curriculum. In the three dozen articles which this supplement contains variety has been provided by enlisting the services of a number of well-known authors. Miss Naomi Royde-Smith, for example, contributes some spirited impressions of the Coronation Scot, and also some distinctly novel views on the subject of "Lost Property."

A full page is devoted to the development of locomotive power on the London & Birmingham line during the past one hundred years, and this subject has been happily handled by Mr. Richard E. Pennoyer with a nice blending of the technical and popular types of information in "language understanded of the people." An article entitled "Travelling Then and Now" is very rightly described as a study in contrasts, for the railway passenger of today would find it difficult to visualise the conditions which existed a century ago when the comfort of travel which is now one of the greatest asset of the railways was almost non-existent. As we have remarked, this supplement is concerned more with describing the multifarious activities of the modern L.M.S. organisation than with early history, and accordingly most of the illustrations are modern. The contrasting value of some ancient scenes has not been overlooked, however, and some old drawings of the royal saloon used by Queen Victoria and the Prince Consort in 1843 make a particularly interesting comparison with the pictures of the present L.M.S.R. royal train. Altogether this production of *The Times* is eminently suited to provide the intelligent traveller with an interesting and informative insight into the many services rendered by the L.M.S.R.; the means by which these services are provided; and something of the history and tradition behind present-day achievements.

Die Sicherungsmassnahmen der Reichsbahn an schienengleichen Wegübergängen (Safety Precautions Adopted at Level-crossings by the German State Railway). By Heinz-Ulrich Müller. Reprinted from "Verkehrstechnik," No. 10, 1938. 11 pages, 13 in. × 9¾ in., 13 illus. Publication No. 301, Vereinigte Eisenbahn-Signalwerke, Siemensstadt, Berlin.—The great increase of heavy motor traffic in Germany has necessitated the introduction of comprehensive safety precautions at the frequent level-crossings. These measures, detailed in the present publication, which is well printed on art paper, comprise the classification of crossings according to location, the erection of warning signs and the rendering more easily visible of the crossing barriers. Next described are the flashing-light signal equipment, now increasingly used, and the fundamental safety principles to be complied with. Operation by complete track circuits, isolated rail circuits and rail contact treadles (now, save where special conditions forbid, standard on the Reichsbahn) is also discussed. Co-operation between the Reichsbahn and public authorities in the matter of safety measures at crossings has led to the imposition of severer penalties on reckless drivers, against whom no safety device can be proof.

France.—An attractive new booklet with the above title has recently been published in English by the Centre National d'Expansion du Tourisme, du Thermalisme, et du Climatisme, 127, Avenue des Champs Elysées, Paris. It describes all aspects of the country, the beauty and interest of which are well portrayed in the numerous sepia photogravure illustrations. Details are also given of the travel facilities available to the visitor. The cover is printed in three colours and the contents in sepia photogravure. Copies are obtainable without charge from the French Railways-National Tourist Office, 179, Piccadilly, W.1, the Southern Railway Continental Enquiry Office, Victoria station, S.W.1, or any travel agent.

The Factories Act.—The National "Safety First" Association has issued a pamphlet entitled "The New Factories Act, 1937, Safety Tables and Memoranda," reprinted, with modifications suggested by practical experience, from the association's *Industrial Safety Bulletin*. Designed to enable occupiers of factories to satisfy themselves that their equipment fulfils all the stipulations of the latest Act, it opens with a questionnaire embracing all the general points to be observed. He who can lay his hand on his heart and reply "Yes" to every searching question may pass on to summaries of the requirements regarding fencing and guards, and the regulations affecting ropes, chains, and lifting tackle; steam boilers; lifts and hoists, and steam and air receivers. The user is referred to books on the Act and the statutory rules already published under it. Copies of the reprint are supplied at 2s. 6d. a dozen from the offices of the association, 52, Grosvenor Gardens, London.

A Modern Marvel, the Harnessing of Light.—Under this rather hackneyed title Col. The Hon. Arthur Murray, C.M.G., D.S.O., has described the many and varied applications of the Radiovisor Photocell as used in conjunction with the appropriate amplifiers and relays. These applications range from such small power duties as smoke density indicating and giving alarms through the slightly more exacting duties of switching on lamps automatically at dusk or actuating a counting device up to controlling duties involving the timing and regulation of quite considerable forces as are needed for example in the opening of large and heavy doors. Radiovisor Parent Limited have extended the field of light control in several directions and are always ready to co-operate with science and industry with a view to perfecting new applications. The principle of light control has already found employment for several purposes on railways, and a shunting device for ensuring safety at level crossings is mentioned. The style of the book is popular rather than technical and its price is 1s. 6d.

THE SCRAP HEAP

TRIP ON ROOF OF "NIGHT SCOT"

Angus McLeod, a railway labourer, fined £3 at Bletchley, Bucks, yesterday, was stated to have travelled on the roof of the Night Scot express from Euston.

He was found guilty of travelling without paying his fare and travelling on the roof of a railway carriage, but not guilty of endangering the safety of travellers.

The station foreman at Bletchley said that the Night Scot was pulled up by the guard with the automatic brake. McLeod jumped from the top of the train and said "I am going to Glasgow."

McLeod told the police, "I went on the platform at Euston with a platform ticket. I had a few drinks and decided to try to get back to Glasgow. I was short of money as I had been paid off by the railway, and I could not afford a ticket.

"The ticket collector ordered me off the train, but I got on the roof.

"The train then started. Ten miles from where it stopped it rolled badly and I nearly fell off.

"It was a silly thing to do, but I was desperate to get home to Scotland."

McLeod had fivepence three-farthings in cash on him.—*From "The Sunday Times," of September 11.*

* * *

WETHERAL TOLL

If on business bent, you wish to pass over the footbridge near Wetheral station it will cost you a penny. But, if you are on your way to church, or to a choir practice, on a Wednesday, Friday, Saturday night, or Sunday, you need pay no toll. That is the ruling of a notice, written in Latin and English, at the foot of the bridge, and which has been there since the days of George IV. The entrance is still guarded by a toll-box, and defaulters earn themselves a stiff glance from the keeper. The stationmaster tells a good story about the bridge which recalls the early days of the railroad, when it was assumed that the line was intended for the use of private engines. The station was then owned by the old Newcastle & Carlisle Railway, and one of the directors earned fame locally by being the only man privileged to dodge the toll. He was allowed to drive his carriage and pair across the line.—*From the "North Mail."*

* * *

RELAXATION BY RAIL

Some of the many advantages of travelling by train are listed by the British Railways Press Bureau as follow:—

Peace of Mind.—The responsibility for every journey is taken by trained staffs of engine drivers or motormen, signalmen are in charge of the most modern equipment along the lineside, and guards travel with every train.

Regularity of Departures and Arrivals.—A higher standard of punctuality is maintained by railway trains than by any other form of transport.

Private Steel Highways.—Prepared tracks are maintained at high standards of perfection, giving smoother travel than by any other means.

All Weather Journeys.—Weatherproof trains, controlled heating and sheltered stations enable comfortable travel to be accomplished irrespective of weather conditions.

Freedom of Movement.—Corridor carriages with toilets, restaurant, buffet, and sleeping cars form part of long-distance trains.

Meals on the Move.—Table d'hôte or à la carte refreshments may be obtained without loss of travel time.

Time to Think.—Quietude and the opportunity to think, or conversation and perhaps romance.

Detached Observation.—A moving panorama to be seen through the carriage windows. Fields, old and new buildings, towns, cities, and unusual views.

Adequate Artificial Lighting.—Enabling reading, writing, needlework, study or relaxation to be enjoyed without strain.

Unconscious Speed.—Many trains now touch 90 miles an hour. It's quicker by rail.

Complete Safety.—Railway trains are the safest form of travel, and railway tracks are the safest and best kept highways in the world.

100 Years of Service.—Dependable and reliable services have been evolved after 100 years of experience.

For long distances the speed and regularity of railway travel is unrivalled, and for short distances railways are indispensable where the traffic density is heavy.

* * *

SAVE THE RUTLAND RAILROAD!

Due to a threat to close the Rutland Railroad the citizens of Vermont are reported by the *Railway Age* to have supported a "Save the Rutland" campaign organised by a voluntary club bearing that name. Mass meetings and processions with bands were arranged, the common catchwords being "A challenge to Vermont, a challenge to Rutland; help yourself; save your railroad." A subscription fund quickly realised $10,000. An endeavour is being made to make the matter an election-eering issue, amid the general excitement.

* *

A RESOURCEFUL POINTSMAN

Anything can happen in India. On a railway in Northern India where the facing points are interlocked with the main and loop semaphores, the stationmaster in charge of a small station ordered his pointsman to lower the loop arm to admit a night train on to the loop line. The pointsman threw over the points, but owing to some slight mechanical defect, he found he could not lower the correct semaphore. That did not defeat him. He just climbed up the signal post, and sat on the outer edge of the signal arm, where his weight, forcing the arm down, altered the green light to red, and admitted the train.

* * *

"STREAMLINED CAN FOR SUBWAY SARDINES"

(Caption to photograph we received of new all-metal rolling stock for the Brooklyn-Manhattan Transit Lines, New York.)

Right: One of the plates in the series "Costumes of Yorkshire," published by Robinson at Leeds in 1813. Behind the Yorkshire collier is shown a Murray locomotive hauling a train of coal wagons, and this is probably the first picture of a steam railway. The plate is thus described: "In the background of the annexed plate is a delineation of the steam engine lately invented by Mr. Blenkinsop, agent at the colliery of Charles Brandling, Esq., near Leeds, which conveys above twenty wagons loaded with coals from the pits to Leeds. By two of these machines constantly employed, the labour of at least fourteen horses is saved"

OVERSEAS RAILWAY AFFAIRS

(From our special correspondents)

NEW SOUTH WALES

"Anywhere to Anywhere" Excursions

At school vacation periods it has been a practice during the past few years to issue excursion tickets outside the metropolitan area from any station to any station at single fare and one-third for the return journey. Because of the State's 150th Anniversary celebrations these excursion tickets were granted for an extended period from December 13 to April 23. In effect this meant that the greater proportion of all country travel was being carried at 66⅔ per cent. of ordinary rates. So satisfactory was the response from the point of view of numbers travelling and in respect of revenue receipts, that the administration decided to test the feeling of the public to the reduced fares during normal months and approval has been given for a continuation of the excursions indefinitely.

Week-End Excursion Tickets

Before May 6, special and cheap week-end excursion tickets for travel between metropolitan and selected country stations were not sold prior to 12 noon on the Friday. From the date mentioned the time of sale was made earlier and these tickets can now be obtained from 12.1 a.m. on Fridays until 12 midnight Sunday. As an added inducement to travel, the tickets, instead of being available by only a limited number of trains, are now available by all trains, with the exception of the Melbourne expresses and the Brisbane Limited express. Apart from the financial aspect of the matter, the department hopes to benefit by a more even spread of traffic.

Workmen's Weekly Tickets

The regulations governing the issue of workmen's weekly tickets were framed many years ago, and provided for travel by trains arriving at Central or city stations before specific times. The establishment of new industries in parts of the metropolitan area, as distinct from the city and its environs, created anomalies, and in consequence, a liberalising of the provisions was decided upon to become operative as from May 1. With a few exceptions workmen's weekly tickets are now available for travel by city and suburban trains arriving at the destination station shown on the ticket before 8.30 a.m. in the case of males and 8.45 a.m. in the case of females.

More Corridor Attendants Sanctioned

With a view to assisting passengers to their seats, attending to luggage, and keeping carriages clean, approval has been given for the employment of corridor attendants on Sydney—Newcastle trains. Attendants have been employed in the Caves Express to the benefit of travellers, and, judging by the increased patronage, to the benefit of the department also.

VICTORIA

Varied Career of Medical Test Car

The medical officers of the Government Railways visit country districts in a vision test and medical examination car that has had a varied career. It was built in 1899 by joining together two others constructed in 1880 for the use of members of the Government on their country tours. The combined vehicle was named *Edinburgh* and Ministers used it also. In 1910 the *Edinburgh* was converted into a dining car to accommodate 24 passengers and was renamed *Mitta Mitta*. It was in 1924 that the car was again converted, this time as a vision test and medical examination car. At long last this veteran is now to go out of commission and be replaced by the former *Wimmera* dining car, which is being refitted for the use of the medical officers.

Steel Air-conditioned Buffet Cars

The first all-steel air-conditioned buffet car is due to be turned out of shops during September. Its shell will be similar to the Spirit of Progress vehicles, and it will differ from the existing buffet car running on the Bendigo line in having a large saloon and kitchen in place of the three passenger compartments of the latter. The saloon, which will be 52 ft. long, will be fitted with a long counter and cafeteria chairs along it to seat 27, instead of only 18 in the existing car. A slow-combustion coke range will be provided in the kitchen. Insulation is specially effective not only in connection with the air-conditioning but also against noise. Three other all-steel air-conditioned buffet cars are in hand, but two of these will be composite buffet and sitting cars. Two first class main line country passenger cars are also being converted into composite buffet cars.

TASMANIA

Decline in Revenue and Co-ordination of Transport

The close of the financial year at the end of June reveals that there has been a reduction in revenue in both coaching and goods, although the detailed figures are not yet available. The decline in revenue is fully accounted for by the infantile paralysis epidemic which adversely affected the passenger traffic, especially during the normal holiday season, and the stoppage of work at the coal mines which drastically reduced the revenue from this source of freight.

Mr. M. W. S. Wilson of the New South Wales Board of Transport is at present in the State for the purpose of advising the Government in regard to the proposed co-ordination of road and rail transport which, it is understood, is being investigated. In view of the work to be done during the transition period, the Government has asked the Commissioner for Railways, Mr. F. P. St. Hill, who as stated previously, is not seeking re-appointment, to continue in office for another nine months after the expiration of his term of appointment in November next.

Buffet Cars

The introduction of buffet cars last year has provided a popular service for passengers. In some of the cars the refreshments are taken round to the seats by lad conductors who first supply a small table to receive the tray. In other cars there are fixed tables and seats, and the passengers enter from either end of the car from other parts of the train. The service was first introduced on one train on the main line, but has since been extended to trains on both the main and western lines, including the boat train running between Hobart and Launceston. The new cars were constructed by the Clyde Company of New South Wales and are of very fine design and appearance.

FEDERATED MALAY STATES

New Locomotives

Three more locomotives, making five in all, have been received and put into service. The trials so far have proved very satisfactory.

Railway Exhibit at Kuala Lumpur Exhibition

The annual exhibition under the auspices of the Malayan Agri-Horticultural Association was held at Kuala Lumpur on July 30 and 31 and August 1. The railway was represented by a stall in the centre of the exhibition grounds.

The exhibits consisted of a working model of a wayside station 30 ft. long by 8 ft. wide complete with ground frames, interlocking, signalling, points, gates, wagons, and coaches. Demonstrators were present to explain the detailed working, and the object was to draw the attention of the public to the care given by the railway authorities to secure the safety of the passengers. A flood-lit panelled screen provided a background on which was exhibited a selection of picturesque F.M.S.R. posters and slogan notices painted in Jawi characters.

There was also an information bureau from which brochures and pamphlets detailing travel facilities, holiday resorts in Malaya, cheap fare and other facilities, were distributed free to the public. There, too, intending passengers could reserve sleeping and seating accommodation and book tickets. A display of posters advertising collection and de-

livery services and other freight train matters completed the section.

CEYLON

Railway Retrenchment

The Railway Department came in for some criticism in the course of the Budget debate in the State Council. In reply to the criticisms, Mr. J. L. Kotalawala, Minister of Communications and Works, said that some of the retrenchment proposals of the railway had been carried out within six months of their being accepted by the Council. By so doing they had saved half a million rupees on personal emoluments alone, while other savings amounted to six and a half lakhs of rupees. The savings would have been more but for the price of coal going up and the rise in the pension bill. Otherwise the deficit would have been further reduced. The diesel units had proved useful and the firm which supplied them had undertaken to see them work satisfactorily. The expenditure on the railway had been the lowest for the last ten years, but the receipts were not more than last year's because the passenger and goods rates had been reduced.

INDIA

Collapse of Railway Bridge

The east abutment, No. 1 pier, and the first span of a bridge between Siltai and Khetur Road stations on the Abdulpur—Nawabganj section of the Eastern Bengal Railway were washed away by floods on August 28. After the transhipment of one passenger train, flood conditions worsened and further transhipment was rendered impossible. Through passengers are being diverted *via* other routes and the booking of goods and parcels to stations beyond Sitlai in the up and Khetur Road in the down direction has been stopped. Large scale flood relief operations have been initiated by the Government of Bengal. An aerial survey of some of the flooded areas has been made.

S.I.R. Cloudburst Derailment

Mr. C. A. Muirhead, Agent and General Manager of the South Indian Railway, states in a press note on the recent serious derailment [described on page 487 in our issue of September 16 —Ed. *R.G.*] that the railway administration has not so far commented on the various statements and opinions published in the press, though many of these are entirely inaccurate and based on misconceptions. The reason for this reticence is that the railway administration considers that while the accident is under inquiry, both by the Senior Government Inspector of Railways and by the magistrates specially appointed by the Local Government, the affair is *sub judice* and no party should make any comments until the reports on the enquiries have been submitted.

The Chief Commercial Superintendent points out that during the last 15 years there have been only two other accidents on the S.I.R. involving loss of life and injury to passengers. One was due to floods in 1925-26, between Adirampatnam and Pattukkottai stations, involving nine deaths and 32 injuries. The other, in 1928, was due to sabotage during the railway strike, and caused one death and 42 injuries. Other minor accidents during this long period were responsible for injuries to only 21 persons.

SOUTH AFRICA

Table Bay Harbour Works

The railway administration is to spend £541,900 on Table Bay Harbour during the current financial year. Of this total, £520,000 is for the additional deep-water berths and the extension of the new basin. A sum of £200,000 is being provided under the heading of "railways," and the rest under "harbours."

The financial position of the new harbour scheme at present, as revealed by the estimates, is that £2,261,000 has been approved by Parliament and that an additional £870,000 has been found necessary. Out of the total estimated cost of £3,131,000, nearly £574,000 constitutes the estimated expenditure to the end of March last. This means that by the time the present financial year's expenditure is disbursed there will still remain £2,037,000 to be spent on the scheme during subsequent years. In effect, a third of the work so far sanctioned by Parliament, will have been completed by the end of March, 1939.

In addition to the above, about £18,000 is to be spent during this financial year on the new Knuckle berth, thus completing the work at a total cost of £403,000. Only a quarter of the cost of this latter work is being charged to the railways.

On the Cape Western System £7,000 is being spent on light-houses, beacons, and bells. The schemes for spending £2,500 on the Robben Island Radio Beacon, £2,400 on that at Cape l'Agulhas, and £2,000 on the light and tower at Saldanha Bay, all of which were passed in last year's estimates, are expected to be completed during the present financial year.

UNITED STATES

No New Bankruptcies

In recent months there have been no new bankruptcies of large railways. The Baltimore & Ohio is one of the systems that have been in grave danger of going "to the wall," but its immediate cash requirements have been met by Government loans, and efforts are now being made to induce its bondholders to accept lower rates of interest, within the power of the company to pay. Similarly, the Lehigh Valley is also endeavouring—with every prospect of success—to secure the assent of its bondholders to a temporary abatement in the rate of interest. There are four or five other railways, the financial condition of which is not of the best, and whether they are forced to seek the good offices of the courts depends largely upon whether and how soon traffics go up and wage rates go down.

Threatened Closure of Rutland Railroad

One of the most portentous occurrences of the present railroad crisis has been the threat of the Rutland Railroad to cease operation entirely. This company, while relatively small, nevertheless, forms one of the principal routes between New York and New England on the one hand and Montreal and other Canadian points on the other. Its gross revenues in 1937 totalled approximately £700,000, indicating that there are many traders and travellers who still value its service.

The company is in the hands of a receiver, reporting to a Federal Court, the presiding judge of which recently declared that the line's operations would have to stop unless expenses were immediately reduced. Accordingly, a reduction in wages ranging from 10 to 30 per cent. was decreed (which the unions have accepted under protest) and salaries of officers were reduced by 56 per cent. Efforts are being made to induce the taxing authorities to moderate their exactions. Meantime, the communities which would lose railway service if the property should be abandoned have become thoroughly aroused to the danger, and prominent citizens have banded themselves together in the endeavour to secure additional traffics for the company. The sympathetic interest which patrons are showing is being viewed with considerable satisfaction by a number of railways whose situation, while not yet as desperate as that of the Rutland, may soon become so.

BRAZIL

Second Congress of Engineering and Railway Legislation

The Second Engineering and Railway Legislation Congress is to be held at Curityba between October 12 and 19; the organising commission is composed of the following engineers:—Sr. Flacio S.de Lacerda, President; Sr. Linneu Ferreira de Amaral, Secretary; and Sr. Rozaldo Gomes de Mello Leitão, Treasurer. A varied programme has been arranged and a railway exhibition will be held in the halls of the Concordia Club.

Brazil-Bolivia New Lines

The Brazilian Government has authorised the purchase of an aeroplane for the use of the mixed commission at present engaged on the survey of the region between Corumbá and Santa Cruz de la Sierra, where, as mentioned in previous numbers of The Railway Gazette, the North Western of Brazil Railway is to be joined up by rail to Bolivian territory. In connection with

this undertaking, a message from Warsaw states that the firm of Kotovkez already has the rolling of rails in hand.

Vacuum Brake to be Standardised

The Minister of Transport has ordered the Federal Inspectorate of Railways to issue instructions to all the railways under its jurisdiction, making the use of the vacuum brake obligatory. It also stipulates that all compressed air equipment must be replaced within a maximum period of ten years. The Madeira-Mamoré Railway, alone, will be excluded from this arrangement for reasons put forward by the Minister of War.

Paulista Railway in 1937

Satisfactory results were recorded by this railway for 1937. Receipts amounted to 125,523 contos of reis, and expenses, excluding interest on external debt, totalled 75,094 contos, leaving a balance of 50,429 contos, to which must be added a total of 16,000 contos brought forward from 1936. After deducting 37,174 contos for dividends; 2,383 contos for the Staff Pension Fund; 2,874 contos interest on external debt as also 2,187 contos for its amortization; 826 contos for the Reserve Fund; 1,803 contos for forest services; and 3,182 contos for interest on imported material, a total of 16,000 contos was carried forward to 1938.

Principal items of traffic compared as under:—

		1936	1937
Passengers ...	No.	5,521,221	5,793,787
Animals ...	No.	596,963	632,365
Parcels ...	Tons	87,176	90,255
Coffee ...	Tons	516,639	543,996
Other goods	Tons	2,278,630	2,534,308
Telegrams ...	No.	473,538	526,172
Ton-km. ...	...	637,937,929	683,049,778

In addition, 45,113 immigrants with baggage were transported gratuitously during the year, bringing the total under this heading to 1,324,479 in the last 55 years. Had this traffic been remunerative it would have produced 10,539 contos.

External Debts

The railway's foreign debt was limited to $2,513,500,00 which was what remained of the $4,000,000,00 debt contracted in the United States in 1922. Interest payments, however, were up to date, except for the remittance due on March 15, when drafts were not possible due to restrictions on exchange, and the total set aside for amortization amounted to 111,125 contos. The Improvements and Traffic Expansion Fund totalled 25,200 contos, and the Reserve Fund amounted to 9,826 contos, while the Forest Services Fund stood at 9,580 contos.

New Lines and Improvements

A new line, 14 km. long, from Baurú to Piratininga, was opened for traffic on June 23, 1937, bringing the total length of system to 1,511 km.; work on a further 45-km. extension, from Pompeia to Tupan, has been begun. A scheme for widening the gauge from Ityrapina to Baurú was approved in July and work began in September between Jahú and the left bank of the river Tieté.

The North Western Railway Improvements Society, controlled by the Paulista Railway in accordance with a contract with the Federal Government dated August 18, 1934, had fulfilled all its contractual obligations. The deviation between Araçatuba and Jupiá had been completed, thus considerably facilitating traffic between Tres Lagôas and Araçatuba; in addition the deviation between Nogueira and Araribá was well in hand. The society had shown a net profit of 1,361 contos for the year, and out of this sum 1,256 contos had been credited to the Paulista Railway.

The Forest Services Department had the care of 16 forests at different points on the system with a total of 13,500,000 eucalyptus trees planted to date.

EGYPT

Whittaker Staff Exchanging Apparatus

Whittaker staff exchanging apparatus was recently brought into use at the following stations and cabins on the Port Said line: El Raswa, Ras El Esh, El Tina, El Cap, El Qantara (Cabins 3 and 1), El Ballah, El Ferdan and El Ismâ'îlîa (Cabin 2).

Second Class Workmen's Tickets

Second class tickets for workmen will shortly be issued on the Helwan line for two special trips that will be run for them in the early morning and two in the afternoon. The fares charged for the return journey on these trips as compared with those for two ordinary single fares in the various zones will be as follow:—

	Special workmen's second class return fare mm.	Two ordinary single second class fares mm.
One zone ...	10	10
Two zones ...	15	20
Three zones ...	20	30
Four zones ...	25	40

No ordinary return tickets are issued.

ALGERIA

New Central Station for Algiers

The heavy industrial and tourist traffic now passing through Algiers has shown up the deficiencies of the existing connections at the port between steamer, rail, and road services. The present quay accommodates only two vessels at a time, and the railway station, dating from 1865, is long overdue for reconstruction; a further obstacle is the narrowness of the thoroughfares between town and quayside, preventing full advantage being taken of the efficient road transport system communicating with the interior.

Plans have therefore been prepared for a new transport centre on the south of the harbour, where shipping offices, railway terminus, and bus station will be grouped around a large square; the boulevards converging on this square will be widened. A new quay, 300 m. long, will be built, to accommodate four vessels at a time, and in a large building at the landward end will be accommodated the customs offices, travel agencies, post and telegraph facilities, and similar arrangements. To the right of this building will be the railway station, with its platforms and lines beneath the square, and its buildings, like those of the marine station, at a slightly lower level than the square, so as to have direct interconnection by subway. The square itself will be used as a coach station, the offices of the operating companies being grouped around it.

CHINA

Canton-Hankow Railway

In spite of daily air raids this railway, the vital line of communications for the Chinese forces, has for months past been comparatively slightly damaged. Damage has been done, but it has been quickly repaired. Some three or four weeks ago, however, the Japanese naval planes concentrated on a seven-span steel girder bridge north of Canton and succeeded in wrecking three of the spans. Moreover, to prevent or hamper repair works the bridge was raided daily, making the task most difficult. After 22 days, however, repairs to the bridge were completed, goods traffic was resumed, and it was expected that passenger trains also would soon be running again. It is evident that the engineers achieved a very fine feat in repairing the bridge despite such great difficulties.

Proposed Extensions in the West

The Ministry of Communications has had to modify its programme of railway development, in consideration of the occupation of eastern China by the Japanese, and the urgent demand for military and trade communications in western areas.

As well as the Paochi—Chengtu line, to connect the capital of Szechwan with the east *via* the Lung-Hai Railway; the Chengtu—Chungking connection in Szechwan; the Chuchow—Kweiyang south westerly main extension; and the Kweilin—Hengchow (Henyang) line between the capital of Kwangsi and Hunan—all of them begun before the present war, and the latter now practically completed—the following new constructions are programmed:—

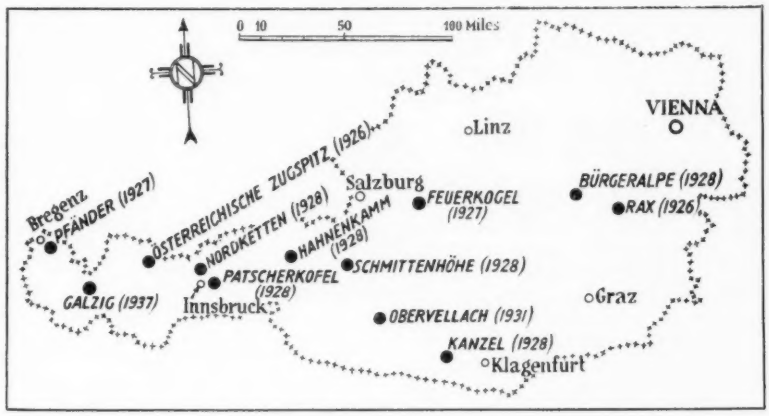
(1) Kweiyang, capital of Kweichow, to Yunnan-fu, capital of Yunnan.
(2) Yunnan-fu to the Burma frontier.
(3) Nanning—Yunnan connection.
(4) Chungking—Kweiyang, to connect Szechwan with the south.
(5) Kweiyang—Liuchow, linking Kweichow with Kwangsi.
(6) Liuchow—Shanshui (Samshui) connecting Kwangsi and Kwangtung *via* Wuchow, and
(7) Chengtu—Kongting.

This network of lines would link up the various western Provincial capitals and provide them with outlets to the southern seaboard, thus forming the nucleus for a complete railway system for a new western state.

THE DEVELOPMENT OF AERIAL CABLEWAYS IN AUSTRIA

Passenger cableways in German Austria now total nearly 19 miles

TOWARDS the end of 1937 the twelfth aerial cableway for passenger traffic in Austria—the Galzig line—was opened. A recent article by Dr. Eugen Citzary in the *Zeitung des Vereins* showed the prominent part played by Austria in the development of this form of transport, which began for goods services in the 'seventies. An engineer named Theobald Obach was one of the first—probably the first—to interest himself in practical constructional details, and the first cableway he made was at Hrastnigg, in the then province of South Steiermark. It was used to convey coal and differed little in fundamental principles from the present lines for similar traffic. This cableway was a remarkable piece of work for its day, and the new system of transport soon spread, as its advantages became appreciated.



Map showing location of Austrian passenger cableways and dates of openings

The general principle of the aerial cableway is that the vehicles run suspended on a carrier cable and are drawn by a traction cable. As a rule a "double line" is provided, and two vehicles, one ascending as the other descends, but installations in which several cars can be run, being attached to and detached from the traction cable, as required, have been made. With the increased cable speed now possible the so-called shuttle working has gained preference. The other advantages of cableways are their independence of the surface of the ground, rapidity and cheapness of construction, and relatively small consumption of power.

It was only at the beginning of the present century that serious attention was given to using cableways for passenger traffic. Austria witnessed some of the first examples of this. In 1908 the Kohler cableway at Bozen (now Bolzano) in the then Austrian Tyrol, was opened, at the suggestion of a hotel proprietor there named Staffler. It was constructed like one of the goods lines with a second traction cable as an extra precaution, but was superseded by a new installation three years later, as the authorities did not think the equipment satisfactory for passenger work. No accident had occurred with it, however. At the same time as the new installation was made, another passenger line was built to the Vigiljoch at Meran (now Merano); both were very solidly constructed with high class cables of great strength and a large margin of safety. Speed was about 2 m. (6½ ft.) per sec.

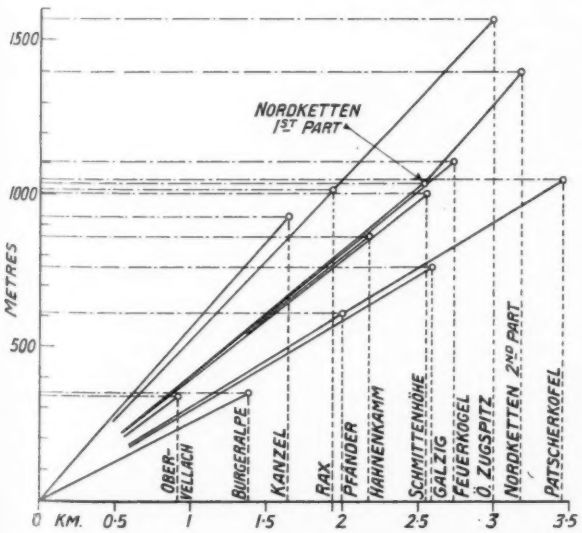


Diagram of altitudes of the Austrian passenger cableways

Experience with goods cableways during the war showed that better working was obtained if the cables were put under fairly high initial tension, the action at the supports, as vehicles pass, being less harmful when this is done. This led to the development of the Zuegg system, with long distances between supports and high initial tensions. The straighter path of the carrier cable enabled higher speeds to be run, as the supporting points could be negotiated better. The Zugspitze and Rax lines were the first to be built in Austria in 1926 on the Zuegg system, the speed being 4 m. (13 ft.) per sec.

From 1926 to 1931 nine more cableways were opened for passenger traffic, with speeds up to 4·5 m. (14¾ ft.) per sec. After that the economic crisis intervened and little further was done. In 1937, however, the Galzig line was opened, with a length of 2,600 m. (2,843 yd.) and rising through 770 m. (842 yd.). It can carry 200 passengers in each direction hourly and has the largest carrying capacity of any line in Austria. The cables have a tensile figure of 200 kg. per sq. mm. (127 tons per sq. in.) and the factor of safety of load to initial tension is 3·5 for the carrier, and 4·5 for the traction cable. Each car carries 30 passengers. The carrier cable is 57 mm. (2¼ in.) in diameter. Speed reaches 6 m. (19·7 ft.) per sec., the journey occupying 7½ minutes.

The high degree of safety attained on these cableways has led to the abolition of all safety catch devices in case of traction cable breakage, which in itself allows of higher speeds being run. With proper design, installation, testing, and maintenance, it is considered that the risk of cable breakage can be ignored. The elimination of the safety catches is regarded as a great improvement. With the

XUM

exception of the Hahnekamm line near Kitzbühel, the Galzig line is the only one constructed expressly for winter sports service, but the increasing popularity of winter sports has led the other lines to arrange to accommodate the traffic, convey skis, and so on. All the Austrian passenger cableways belong to an association for promoting their interests. They have a total length of 30 km. (18·6 miles) and a total height of 11,050 m. (over 11¾ miles). About a million passengers are carried annually, with receipts totalling 2 million schillings. About half the passengers travel to the winter sports. Further lines are understood to be under consideration.

A UNIFIED COLONIAL RAILWAY SERVICE?

By a colonial railway officer with British, Colonial, and foreign railway experience

THE article on a unified Colonial railway service published in the issue of THE RAILWAY GAZETTE of July 15* exposed with admirable restraint and unerring precision the fallacies contained in the original proposition. Two of the expositions may be recalled: "out of touch with the practical things of life"; and the proposed unification forthwith being separated into groups, bearing little relation to one another. Your contributor in the issue of August 5 makes various incorrect statements, but his most valuable contribution is the unwitting exposure of the ultimate purpose of the proposition in that indefinite dual negative so common to "official" correspondence:—

> It should not be impossible to find a suitable Railway Officer with executive experience in a Crown Colony or Colonies who could fill such a post with advantage to the Secretary of State and the territories.

The indication was clear from the beginning and it is clearer now. The advantage must also embrace the distinguished holder of this post—this "Transportus Maximus" who with all the unctuous grace of a learned professor is to propound platitudes, culled from text books and current technical literature, that will reverberate from British Guiana to Hong Kong with quasi-pontifical infallibility. What of the emoluments pertaining to this function of meddlesome activity sanctified by that much abused word "co-ordination"? Yet another burden to be added on the patient taxpayer for the apotheosis of the careerist.

Let us re-examine some inaccuracies of your contributor of August 5: "The first time a definite scheme has been published." Like the Holy Roman Empire of Anatole France, it is not "definite," it is not a "scheme" and it is not "holy" in that it is an attempt to produce an atmosphere suitable to the creation of a "*fat job*." A case was *not* made for unification; on the contrary, any case for unification was palpably weakened by the transparent objective—"the highly-paid office in London."

The staff side was rightly stressed, for, as is so often forgotten, it is the staff that does the work. Salaries and scales are of equal importance, for one result of "co-ordination" may well be reduction in salary of those who do the work in order that funds may be found wherewithal to pay a handsome salary to the "co-ordinator." The divergence in statutory authority and financial relations can be rectified without the aid of a highly-paid "co-ordinator" in London—as indeed was done or intended in the matter of unified statistics. That some have not accepted the standard for very good reasons, is an indication of the results likely to attend the efforts of the great "co-ordinator."

Various Colonial railways were stated to have been "commercialised recently." That is far from fact. In theory yes, perhaps; in fact, they have not, as careful study of the annual reports and the local regulations make clear. The troubles of the Ceylon Government Railway have little relation to "commercialism" but much to political interference, as the able report thereon makes clear. To say that any State railway has been commercialised is a contradiction in terms and an astonishing example of the complacency of loose thought carelessly expressed.

By references to divergence in annual reports and their measures of effort, your contributor is on sure ground; but surely no highly-paid post of meddlesome activity in London is required to secure a greater measure of uniformity. Can it be contended for a moment that highly responsible men with years of experience will not themselves readily acquiesce in any scheme for the better co-relation of comparison in effort and cost thereof? An intelligent clerk could discharge the necessary functions of the London co-ordinating "post office" in a matter of a few hours.

Your contributor presupposes a retired or serving Colonial railway official with so great a grasp of his subject as to be able to dictate ("advise the authority") details of railway law, accounts, statistics (operating and commercial) in conflicting circumstances, but ignores the equally vital matters of civil and mechanical engineering, and above all of members of the staff and their nationality. This airy dismissal of essentials postulates the ability of that able body—the Crown Agents—to deal with them. As readily as that body can deal with such essentials, as readily can it deal with the other less technical details—and at far less cost.

Turning to cost, it is alleged that once "Transportus Maximus" is ensconced in a London Chair, no further commissions of inquiry will ever be necessary, and so the justification for more annually recurrent expenditure. Let us examine that for a moment. Would "Transportus Maximus" never leave the chair? Would he not (with family and secretary) in selected cool seasons take opportunity to visit those in whose breasts "*esprit de corps* had been made a vital thing," to gain the incalculable benefit of local knowledge and first-hand information? In his absence yet another *crustacea fundamenti* would "act." Imagine the perquisites? Free entertainment, travelling allowances, free living during the voyage both ways, and the permanent sycophancy of all those desirous of promotion, desirous of contracts, desirous of employment.

The average Colonial servant is a patient and well-disciplined creature, but being British does not take kindly to either dictatorships, co-ordinatorships, nor pretence. The thousands of Colonial railway officials who have read these articles not without amusement, must in many cases writhe with shame that the high ideals and aims of service to subject peoples should be so patently prostituted to "careerism."

* Articles and letters debating this subject have appeared in our issues of May 13, July 15, August 5, and August 19

NEW 4-6-0 EXPRESS ENGINES FOR EIRE

A 3-cylinder design for Great Southern Railways Dublin-Cork service

A SERIES of new main line 4-6-0 express locomotives, of "No. 800" class, designed for the Dublin—Cork service, is under construction at the Inchicore works of the Great Southern Railways, Eire. The engines have three high-pressure cylinders, 18½ in. dia. × 28 in. stroke, with piston valves of 9 in. dia. and 6¾ in. maximum travel; independent sets of Walschaerts gear are provided for the three cylinders. The quadrant links and eccentric rods are fitted with needle roller bearings.

The bogie wheels are 3 ft. dia., with inside journals and roller bearings; hitherto such bearings were fitted only to wheels having the journals outside. The coupled wheels are 6 ft. 7 in. dia., with journals 9½ in. dia. × 11 in. long, taking an axle-load of 21 tons. Ducol high tensile steel is used for the main engine frames and those of the bogie and tender.

The boilers are designed for a working pressure of 225 lb. per sq. in., and are constructed of 2 per cent. nickel steel. The front and back firebox plates are of copper and the wrapper plate of Kuprodur. Kuniclad copper-covered stays are fitted to the main portions on each side of the firebox, which has a foundation ring 3½ in. wide. The boiler fittings include a 28-element header with M.L.S. multiple valve regulator. The superheater elements are 1½ in. dia. outside, and the large smoketubes of 5½ in. outside diameter. There are 143 tubes of 2 in. outside diameter.

The firebox over casing is 10 ft. long and 4 ft. 5½ in. wide, giving a grate area of 33½ sq. ft.; the firebox tube-plate slopes forward to give a large combustion space. Kuprodur screwed-in bushes are fitted to the tube holes of both large and small tubes.

Two 3-in. Ross pop safety valves are fitted. The heating surface of the engines is as follows:—

Firebox	200 sq. ft.
Tubes..	1,626 ,,
Superheater	330 ,,
Total	2,156 sq. ft.

The outside dimensions of the boiler barrel are 14 ft. 5½ in. by 6 ft. dia. A roomy cab is provided, 9 ft. wide, fitted with sliding side windows, having a mechanical wiper for the front window at the driver's side. There are two 12-feed mechanical lubricators, one supplying the cylinders and the other the axleboxes and slidebars.

The tenders have a capacity of 5,000 gal. of water and 8 tons of coal, and are carried on six wheels of 3 ft. 9 in. dia., fitted with roller-bearing axleboxes. The tanks are constructed of Dalzo rust-resisting steel. The roller and needle bearings were supplied by the Hoffman Manufacturing Co. Ltd.

The tractive effort of these engines will be 33,000 lb.

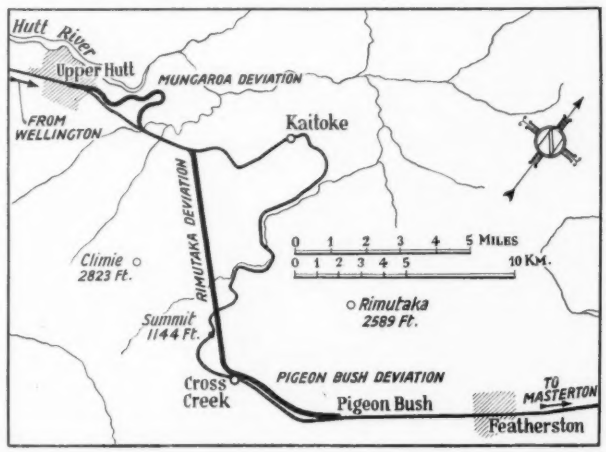
Instead of the standard dull grey in which G.S.R. locomotives are at present painted, these new engines will be painted a blue-green.

THE RIMUTAKA TUNNEL PROJECT, NEW ZEALAND

This important scheme involves a 5¼-mile tunnel and electrification of 25 miles of line, the whole estimated to cost nearly £1¼ million

IN THE RAILWAY GAZETTE of January 4, 1935, we published an illustrated article descriptive of the famous Rimutaka incline on the Wellington—Masterton section of the New Zealand Government Railways in the North Island. To enable readers to appreciate what the new tunnel scheme will achieve it may, however, be repeated that the existing incline is three miles in length, its gradient 1 in 15, curves are 5-ch. radius, the summit altitude is 1,144 ft., and the rise accomplished is 869 ft. Special Fell engines and a centre rail, gripped horizontally by wheels to enhance traction and braking, are necessary, and, as these special engines work only on this three-mile section and four or more of them may be required to work an ordinary sized train, the cost of operation is very high indeed. Considerable discomfort is caused in the several tunnels on the existing line due to smoke from the multiple locomotives. Any scheme, therefore, that will at once eliminate all these handicaps to efficient operation is worthy of consideration, and it is not surprising that, with this object in view, the intention of the Government to proceed with deviation by driving a tunnel from Mangaroa (23 miles from Wellington) to Crosscreek (38 miles) has been officially announced by the Prime Minister, Mr. M. J. Savage. The project will involve a tunnel 5¼ miles in length with a gradient of 1 in 132—as against 1 in 15 at present—and the cost of the work is expected to be approximately £1,000,000. Electrification of the line from Upper Hutt to Featherston is also part of the present scheme, and the cost of this has been estimated at £215,000.

Besides eliminating the present disadvantages already enumerated, the proposed tunnel will shorten the distance between Wellington and the Wairarapa by eight miles, and reduce the time of the journey from Masterton to



Proposed course of deviation, with 5¼-mile tunnel, to avoid the Rimutaka incline

XUM

Wellington by at least an hour for steam trains. The summit altitude also will be reduced from 1,144 ft. to approximately 500 ft. So far only preliminary surveys have been made, and a final survey will be necessary, but it seems almost certain that the tunnel will be about the same length as the Otira tunnel, which is the longest in the British Empire.

In making the above announcement the Prime Minister said that half a dozen different routes at least had been reconnoitred or surveyed in the past. The route that had been finally selected as the most suitable, both from the points of view of traffic and cost, was that known as the Mangaroa—Crosscreek tunnel route. This route would leave the existing railway about a mile beyond Mangaroa station, and after passing through a short approach cutting, would enter a tunnel emerging just above the present Crosscreek station, as shown on the sketch map on the previous page. The Prime Minister also gave the assurance that work could begin quite soon, and that with the men and the machinery available, it would be possible to revolutionise this undertaking, compared with the methods that were followed in the past.

In the financial justification for this scheme, it is stated that, against the interest required upon the capital outlay, there would be annual savings accruing from the abolition of the special operating methods now necessary, from greatly reduced engineering maintenance, from reduction of curvature, and from shorter distance operated, savings that in aggregate are expected to balance the interest charges. There are, in addition, numerous subsidiary advantages claimed for the new project such as the provision of employment for a large number of men, added comfort of travel, increased facilities for combating other forms of transport, and reduced risk of menace to safety.

RE-USE OF WORN RAILS, BELGIAN NATIONAL RAILWAYS

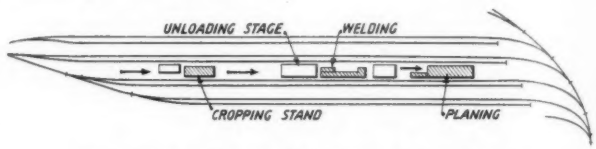
Special depot established at Schaerbeek, near Brussels

THE Belgian National Railways possess a comprehensive and efficient system of dealing with worn rails at a centrally situated depôt at Schaerbeek (Brussels). After careful selection by specially trained gangs, who work to very exact instructions, rails suitable for further service have the upper face of the rail-head bevel planed. Special equipment to take two rails up to 79 ft. long at a time is used for this purpose and has an output of 100 rails per eight-hour day. The staff required for this operation numbers seven. The battered and worn rail ends are then sawn off and new fishbolt holes drilled. This is accomplished in two machines which simultaneously cut and drill. The time taken for one combined cut and drilling operation is three minutes, and the output of the machine is 85 rails per eight-hour day. Six men work these machines.

After machining, the rails are stacked in piles of similar section and degree of wear, the latter measured to within $\frac{1}{2}$ mm. (0·0197 in.) so that the rails may be accurately selected for further service. The disadvantage arising from the shortening of the rails and the consequent increased number of joints has been overcome by the adoption of end to end welding, of which the flash butt resistance process is that now adopted as the most reliable. The work being done on mass production lines, the price of such a welded joint is now only half that of a fished joint.

In the welding shop the rails, previously sorted, planed and cut, are welded into normal lengths of 35 m. and 52·5 m. (114 ft. 10 in. and 172 ft. 3 in.) with corresponding shorter lengths for use in the inner rails of curves. The 35-m. rails with not more than 4 mm. ($\frac{5}{32}$ in.) wear on the running surface are used again on secondary running lines. They are prepared in such a way as to permit of true finishing of the joints in which the fishplates join the two halves of the same rail. The building up of long welded rails so as to achieve this necessitates an additional weld per rail, which, however, is considered to be amply justified by the improved performance of the material in service and the reduction in maintenance costs due to the fishing angles in the adjacent rails being identical, and the perfect alignment between the running surfaces at the joints, which is otherwise not always obtained even with new rails.

A working plan is made for each site to be relayed under these conditions, each rail of a series being numbered, including, of course, the short ones for the curves, so that the ends to be joined come from the same rail sawn through the centre. The machining, loading, transport, unloading, and laying are done in strict accordance with the plan. With their complete equipment the Belgian National Railways deal with some 60,000 tons of reconditioned rails annually in a sorting yard and depôt covering about 12$\frac{1}{3}$ acres.



Layout of rail reconditioning yard and shops

An interesting application of welding is that of joining rails of different sections, or of the same section but worn to different degrees. For rails of the same section with a difference in wear not exceeding 4 mm. ($\frac{5}{32}$ in.) direct welding of the two rails is adopted. For rails of the same section but with a greater difference in wear, a piece of rail 500 mm. (19$\frac{11}{16}$ in.) long and of the exact height of the rails to be joined is inserted between them and the welding operation then takes place. Rails of different sections are treated in a similar manner to those of the same section with the insert between, but the inserted piece of rail is of the heavier section.

The foregoing is abstracted from an article in the May, 1938, issue of the *Bulletin of the International Railway Congress Association*.

IMPROVEMENTS TO MARYLEBONE UNDERGROUND STATION.—The London Passenger Transport Board is planning to improve this station in the very near future at a cost of nearly £100,000. The scheme includes the installation of escalators in place of lifts and the lengthening of the tube platforms. Marylebone tube station was known as Great Central until 1917. In the work of reconstruction a short passage will be built at tube level leading from the lift shaft to the base of the escalators; the latter will emerge on the side of the L.N.E.R. station concourse close to the end of platform No. 4. On the site of the bottom of the lift shaft a small ticket hall will be built to enable passengers, on leaving the main-line company's platforms, to take their tickets at tube level.

ROAD TRANSPORT SECTION

This section appears at four-weekly intervals

Road Goods Vehicle Licences

THE Minister of Transport has made "The Goods Vehicles (Duration of Carriers' Licences) Provisional Regulations 1938," and "The Goods Vehicles (Licences and Prohibitions) (Amendment) Provisional Regulations, 1938," the first of which is dated August 31 and the second September 1. These regulations provide respectively for longer currency periods for carriers' licences granted under the Road and Rail Traffic Act, 1933, and for increased fees in respect of those licences. The currency period of carriers' licences granted after the date when the regulations come into force is five years for "A" licences, two years for "B" licences, and five years for "C" licences, but the licensing authority may in his discretion grant a licence for a shorter period in order that a suitable and convenient programme of work may be arranged. Fees for licences (other than short term licences) are to be: £7 10s. 0d. for an "A" licence, £3 10s. 0d. for a "B" licence, and £1 5s. 0d. for a "C" licence in respect of every vehicle authorised. For variation of a licence which has the effect of authorising the use of a greater number of vehicles than that previously authorised the fee for every additional vehicle above that maximum is to be for each period of six months of the unexpired period of an "A" licence 15s. and of a "B" licence 17s. 6d. For every year of the unexpired period of a "C" licence the additional vehicle fee is to be 5s.

Original Rating Methods on the B.B. & C.I.R.

THROUGHOUT the greater part of the 43,000 route-miles of line in India, intense competition from buses and lorries has to be faced to an ever-increasing extent, and it is only natural that in this competitive struggle by rail and road hauliers to attract custom to their special types of transport, novel methods of rating should make their appearance. For instance, on the 141-mile Delhi—Hissar metre-gauge line of the B.B. & C.I.R. there is very keen motorbus and lorry competition. To recapture the dwindling passenger traffic, the administration introduced a fast train service—the Haryana express—with more attractive fares. Motorbus competition has thus been effectively countered and passenger traffic has flowed back to the railway. Parcels traffic, however, still moves to a large extent by road on account of higher charges by rail and by reason of the comparative simplicity of the *modus operandi* of the road hauliers. By consigning goods in lorries, the shipper escapes the vexatious delays attendant on filling up forms and diverse risk notes and eschews the need for conforming to packing conditions which transit by rail involves. To check this diversion to the road, the B.B. & C.I.R. has now devised an entirely new scheme. It has agreed to let out on hire a parcels van with a carrying capacity of 100 maunds (roughly $3\frac{3}{4}$ tons) at a charge of Rs. 35 (about £2 12s. 6d.) a trip. The usual charge for a load of 100 maunds is Rs. 106 (approximately £7 19s.). The lessee of the van is given comparative freedom to load what commodities he likes, except offensive and dangerous goods and other excepted articles, and to charge his customers what rates he likes. This flat rating system corresponds more closely to the cost-of-service principle to which road hauliers subscribe; and by carrying the fight into its rival's camp, the railway administration hopes to recapture traffic. With rail transport the practice is to base charges on the value of service rather than cost of transport. This experiment is certainly revolutionary, but such is the intensity of competition that the railways have no option but to bring their methods more in alignment with those adopted by other means of transport. There is only one other scheme which may be said to resemble this new development. In England, the system of agreed charges has been designed not only to eliminate the clerical labour involved in filling in forms, but also to simplify accounting. The various products of a firm which has entered into an agreement with the railway are carried at one flat rate a ton, irrespective of the difference in the class of the commodity or the distance to which it is carried. With the deterioration in the higher ranges of traffic, with the "creaming" of commodities, which the advent of road transport has fostered, the financial position of railways the world over is becoming precarious, and railways in consequence endeavour to protect themselves with new and untried devices.

A Sand Drag on a Tram Line

THE ex-L.C.C. tram line which was extended from Southend Village, Catford, through the Downham Estate some 12 years ago, comes to an end at Grove Park station, Southern Railway, on a gradient falling so sharply that two instances of runaway cars occurred within a few months of each other. The wheel marks on the roadway are still plainly visible, and may be seen in

Sand drag at the Grove Park terminus of a London Transport tram line

XUM

our illustration. These runaways headed straight for the railway tracks, and might have caused considerable damage, not only to the railway, which here runs in a cutting, but also to the feeder cables for the electric trains, in which case railway traffic might have been dislocated over a wide area. Fortunately, soft ground at the top of the cutting stopped the tramcars, but to obviate future trouble, the London Passenger Transport Board has recently laid down the sand drag illustrated. This takes the form of a pair of narrow concrete channels, 7 in. deep, and continuous with the rails. These channels are partly filled with sand, and paved over with fine tarred macadam. No further runaway has so far tested the efficacy of the arrangement. It may be added that the L.C.C. had no intention of making a dead end at Grove Park, but had powers to extend the line through to Well Hall, Eltham (where it would have linked up with the existing Eltham—Woolwich section) *via* Baring Road, and several new roads then under construction. The portion through Westborne Avenue was laid, and is in regular use, but the board has not proceeded with the remainder of the scheme.

Some Diesel Bus Experiences

DURING the discussion on a paper on oil engines for road vehicles read in Australia it was stated that experience with several large oil-engined passenger bus services in England over a period of nearly two years showed that the average liner wear of four-cylindered and six-cylindered engines up to mileages of 35,000 averaged 0·001 in. per 3,500 miles. Reboring, and in certain cases, new liners, were needed after an average of 60,000 miles compared with about 80,000 miles for petrol engines. To obtain the best results decarbonising was carried out every 10,000 miles, but some of the engines went almost twice this distance without appreciable falling off in power or without increased fuel consumption. The fuel injectors were cleaned after 2,000 to 3,000 miles, but in some cases had covered 15,000 to 16,000 miles without cleaning and had given no trouble. Fuel pump plungers and barrels had given 200,000 miles of service before replacement. Valves required attention after an average of 16,000 miles. Crankcase-oil was changed after 2,000 to 3,000 miles. Lubricating oil consumption, taken over long periods, tended to be somewhat higher than that of petrol engines of equivalent power.

Against this, the experience of the Public Service Co-ordinated Transport, of New Jersey, in operating 27 diesel buses with electric transmission, instead of the mechanical drive of the vehicles quoted above, and over a distance aggregating more than 1,000,000 miles, is that the effective mileage is twice that of a comparable petrol engine. Failures in service average one in every 25,000 miles, and as yet none has been caused by a defect in any oil engine principle. Nearly all of them are due to auxiliaries such as the water and oil pumps, and to the clogging of the fuel pipes. Over the mileage to date, the maintenance cost has been less than that of the petrol-engined buses, despite use on intensive service with very closely-pitched stops, and the m.p.g. of lubricating oil is about twice that of comparable petrol engines. As a rule the piston rings are changed and the engines cleaned every 25,000 miles. No bearing trouble has been experienced in the 1,000,000 miles of operation. Hercules oil engines, giving a maximum of 125 b.h.p. at 2,200 r.p.m., are used in these 36-seater buses, and with the electric generator are mounted transversely at the back end of the vehicle.

In Manchester, where large numbers of both petrol and diesel buses are at work, the respective fuel consumptions are 4·25 and 8·5 m.p.g., and with an average annual mileage of 35,000 an oil-engined bus saves £244 a year in fuel costs compared with a petrol-engined unit. Cylinder liner life averages about 90,000 miles, and wear figures of 0·001 in. per 20,000 miles have been obtained. Hard liners with a Brinell number of 950 are used in the Manchester buses. Great care is taken in the selection and treatment of fuel. Large underground tanks are used for storage, and are filled by pumps delivering about 8 gal. a minute. All fuel is centrifuged in a Hopkinson plant as soon as it is received from the supplier, and this eliminates any contamination or condensation of water which may have taken place during transit or which might be present in the main tank. Inclusive of all capital charges, the cost of centrifuging is less than 0·1d. per gal. The viscosity of the fuel at 100° F. is limited to 36 sec. Redwood, in order to obviate any difficulties in ensuring a continuous supply to the injection pumps.

Transport Legislation in East Africa

THE stages at which measures for the co-ordination of transport in the East African territories of Kenya, Uganda, and Tanganyika, have now arrived, are reviewed in a recent issue of the *General Manager's Bulletin*, issued by the Kenya & Uganda Railways and Harbours. It is recalled that a report on the subject by Sir H. Osborne Mance was submitted to the governments concerned in December, 1936, and stated as its conclusion that " some form of regulation of the exercise of transport must be considered as inevitable." During last year, legislation to this end was introduced in the three territories. The Traffic Ordinance, 1937, of Uganda, and the Transport Licensing Ordinance, 1937, of Kenya, are both modelled upon the English Road Traffic Act of 1930. The Uganda ordinance, where passenger competition was the more serious for the railways, provides for a traffic control board to which persons desiring a licence for a public passenger road service vehicle must apply, and which will also hear objections and make its decision in the public interest. Provision is made, however, for extending the application of the licensing arrangements to " any motor vehicle constructed or adapted for use and used primarily for the conveyance of goods in the course of trade and agriculture." In Kenya, also, an authority has been established to issue the equivalents of the British " A," " B," and " C " licences to goods vehicles; a road service licence to passenger vehicles; and an inland water transport licence. Provision is also made to license " dual purpose " (goods and passenger) vehicles for service in out-districts. In Tanganyika, the Transport Ordinance, 1937, likewise provides for transport to be regulated by licensing in the public interest, but has created only two classes of licence—public carriers, and private carriers—for goods vehicles.

The French Highway System

THE article published under this heading in our July 1 issue was drawn from a publication of the International Chamber of Commerce entitled " Highway Administration and Finance in Fifteen Countries," and we regret that the source of the information was not duly acknowledged. All five continents are represented in the countries chosen for report. These were selected as being particularly characteristic of present-day methods. This brochure affords therefore a good opportunity of making a review of the important progress in road construction which has been made during the last few years in various parts of the world. The publication entitled " Highway Administration and Finance in Fifteen Countries " is available from the International Chamber of Commerce, 14, Queen Anne's Gate, London, S.W.1, price 3s.

Road Transport in the North East

A survey of road transport freight services provided by the London & North Eastern Railway in its North Eastern Area

By A. A. HARRISON,
*Road Motor Superintendent, North Eastern Area, L.N.E.R.**

"CARTAGE," the old word for a railway company's road business, is hardly a broad enough term for the work of a fleet of 776 motor vehicles and 815 trailers, not to mention 500 horses and 1,656 rulleys. Cartage was good enough as a name when the railway was engaged only in the collection and delivery of railborne traffic within a mile or two of the town stations, but we now have to cover the more extended work of railhead distribution, country cartage, part carriage by road instead of rail, and a small proportion of throughout conveyance by road. The extent of the developments which have taken place is shown by the facts that the motors run 5 million miles, and the combined road-transport stock carries over 2 million tons in a year.

Loading sheep into a livestock vehicle

In 1871 the North Eastern Railway obtained certain road-transport powers, and in 1905 they were strengthened to the extent of enabling the company to "provide, own, work and use . . . road vehicles, to be drawn or moved by animal, electrical, or any mechanical power." The Railways Act of 1921 confirmed the powers for collecting and delivering railborne traffic, but the road transport powers were repealed by the Act of 1928, which gave the London & North Eastern Railway Company and the other companies their present powers for the conveyance of traffic throughout by road. Up to about 1875 most of the carting was done by agents, but in 1875 the North Eastern owned 693 horses, and the number had grown to 1,523 by 1907. A Traffic Committee Minute of 1874 refers to a memorial from tradesmen and others in Gateshead asking for a van to be provided for the delivery of parcels instead of using handcarts, and two horses and a van were authorised and the delivery boundary was extended to one mile from the station.

The old North Eastern Railway shared with other companies the development of cartage by railway-owned horse teams, but it was a pioneer in mechanical road transport. The company introduced steam wagons and provided a country cartage service in the Easingwold District in 1904. By 1906 it had 17 steam wagons at York, and had opened additional services in the Northallerton, Newcastle, and Leeds Districts. In the following year, a beginning was made with the Tyneside tranship services, and there can be little doubt that this was one of the first occasions upon which a railway company carried traffic by road for part of the journey. The Tyneside services were operated by two Commer lorries, which were the first petrol vehicles introduced by the company. This article is not intended to deal with the old North Eastern Railway Company's pioneer bus services, but it may be noted that in 1914 the buses were converted into goods vehicles for use in connection with military stores conveyed by rail. By this time the old steam wagons were falling into disrepair and gradually dropping out of service and bus conversion continued. Up to the middle of the war, motor vehicles were employed for a mixture of town and country cartage. For various reasons the country services had to be allowed to lapse, and until the revival in 1927 and 1928, the fleet was engaged either on tranship work or town cartage. In 1919, a number of Army lorries was acquired, and the fleet in 1921 stood at 64, including two electric vehicles.

The North Eastern Railway developed a system of employing contractors for farm collection and delivery services, and these services were the foundation of the present country facilities. Many of the contractors gave excellent service, but the growing competition of road hauliers made it imperative to have a large fleet of railway-owned vehicles to deal promptly and efficiently with the traffic. The change began in 1928, but it was not until 1933 that large numbers of motors were employed to carry out the first stage of a scheme to provide country cartage throughout the whole of the area. The scheme provided for railhead centres in all the important towns and many of the larger country towns. Motor services were scheduled to operate from the railheads and many branch line stations ceased to deal with "smalls" traffic. Many wayside stations were listed as carting stations, and today 542 out of the 585 goods stations in the area are so listed. Since 1933, new railheads have been created and new services established, and there are now 83 railheads serving about 3,000 villages, the whole of the area, except the sparsely populated moorland regions, being provided with collection and delivery facilities. The distance between the stations and the remote villages has been bridged, and no one travelling in the Northern Counties could fail to be impressed by the ubiquity of the company's motors.

The country service motors fall into two main groups, one of scheduled services on established routes, and the other of miscellaneous full-load traffic, but many motors are occupied with a mixture of the two. The motors perform collection and delivery work; they carry by road for part of the journey in place of rail, and to some extent they carry by road throughout. The country road transport arrangements cover a considerable livestock service which was begun in 1929 to give a cartage service in association with rail conveyance. Farmers and dealers are,

* Reproduced from the "L.N.E.R. Magazine" by courtesy of its Editor

however, disinclined to transfer stock from one vehicle to another, and the greater part of the livestock work involves conveyance throughout by road. Experiments have been made with many kinds of equipment, but standardisation will probably be reached on two kinds of vehicle. Where there is sufficient traffic, platform vehicles are provided of 3-ton capacity with lift-off double-deck bodies with ramps for the lower and upper decks. When not in use for livestock the lift-off body is placed on trestles or a stand rulley, and simple but efficient gantries are supplied for lifting in cases where it is inconvenient to use the station crane. Where this kind of equipment cannot be justified, ordinary 2-ton light vehicles are provided with demountable livestock equipment. The fleet includes 16 horse-boxes of luxurious type containing two, three or four stalls. These are normally based near the racehorse-training establishments in Yorkshire. The busiest period is the flat-racing season, but in winter the horse-boxes are employed in connection with steeplechases and hunting, and the company even trails the hounds van for the Bramham Hunt. The boxes are used mainly for short or medium distance throughout road transport, but at the race meetings they are used between course and station for railborne horses. The boxes have also been of value in relieving passenger trains on branch lines.

Mechanical horse and special low-loading trailer being loaded by means of mobile crane

Apart from the rather fragmentary town cartage services operated by mechanical transport before and after the war, the earlier tendency in the North Eastern Area was to concentrate on the employment of motors for country cartage work. It was considered that the towns had an efficient horse cartage service, and that the most urgent need was to provide facilities in the country districts. In any case, up to about 1933 a suitable unit for town cartage had not been evolved, and the existing heavy-type single-unit vehicles were expensive to operate. It was necessary, for goods traffic, to find a vehicle which would permit of advance loading without leaving the power unit standing, which could be operated on a favourable substitution basis as regards units, and which would yield an economy. It was obvious that the need for smart and speedy parcels collection and delivery called for mechanisation as soon as vehicles could be supplied to give an efficient and economical performance. The change was hastened by a considerable widening of boundaries brought about by competitive pressure and by the development of new residential areas. Parcels motors were tried in 1911, but they were discontinued, and although a few motors were introduced in Newcastle and Leeds about 1930, there was no considerable expansion of the motor van fleet until 1932. Since then mechanisation has been the aim, and it has now been fully achieved. The results have amply justified this policy, for in terms of both efficiency and cost mechanisation has been a success. The fleet of 134 vehicles consists mainly of 1-ton and 10-cwt. vans, and the latter, with a cubic capacity of 120 cu. ft., a quick turn round and low operating cost, have established themselves as an essential part of the establishment.

Mechanical horse units attached to trailers

On the goods side, mechanisa-

tion has not been such a simple problem, and the early attempts at a solution were prejudiced by the type of vehicle available. Apart from a tractor and trailer experiment a year or two before the war, the motors which were tried from 1906 up to 1932 were single-unit vehicles of heavy type. An attempt was made some years ago to solve the advance loading difficulty by the use of demountable flats and stand rulleys, but these were never a success, and their doom was sealed when licence duties were increased. It was not until cheap single-unit vehicles of light type were available for work which did not involve advance loading, and mechanical horses were available for work which did, that substantial progress was made. Mechanisation advanced rapidly from 1933, when the modern type of mechanical horse became available in 3- and 6-ton capacities. The fleet now consists of 306 such units and 770 trailers, which have assisted to provide completely mechanised services at 30 stations in the area, including such important places as Sunderland, Gateshead, Middlesbrough, Stockton, Durham, and Harrogate. There is practically no work up to 6 tons for which the mechanical horse cannot be used, particularly since low-loading trailers of general utility have been evolved. Normally these trailers, which are fitted with a winch, are used for containers, but the addition of demountable clamps enables them to be used for crates of glass. Sides and ramps can be fitted for cables or livestock, and specially-designed trestles can be fitted for loads of exceptional length where the new pole trailers are not available. The pole trailers are either articulated or 4-wheeled non-articulated, and it has been found that the 6-ton mechanical horse provided with suitable ballast over the back axle, can be successfully employed as a tractor for 4-wheeled trailers.

The complete mechanisation of goods cartage in the area has not yet been reached, because it has not been possible in every case to provide a sufficient number of units to ensure the economic displacement of the horse teams, and attention has, therefore, been turned to the production of a smaller mechanical horse. Experiments with a 30-cwt./2-ton unit have had sufficiently good results to justify the hope that a unit may before very long be available which, when combined with the heavier units, will enable complete mechanisation to be effected on an economic basis. Whether in town or country, the company's aim is to provide efficient and reliable road-transport services in connection with rail which will add to the attractiveness of the complete transport service which the railway has to offer to its customers, and there can be little doubt that the systematic development of these services has contributed in no small degree to the strength of the company's competitive position.

Photo by [*F. Falkingham, York*

A Daimler four-stall horse box

Indian Motor Vehicle Bill

After a four-day general debate on the Motor Vehicles Bill [briefly outlined on page 374 in the Road Transport Section of our issue of August 26], the Central Legislative Assembly adopted the motion for the consideration of the Bill on August 31, and the House proceeded to discuss the clauses of the Bill. The opinions expressed were generally in agreement with the principles underlying the Bill, though some were inclined to believe that the limitations imposed upon road transport would strangle the road motor services to the benefit of the railways and to the detriment of the vast number of people employed in the road transport and allied businesses. The hope was expressed that inter-provincial road transport on sound lines would not be unnecessarily restricted.

Third party insurance, which the Bill makes obligatory for road transport, is another controversial point about which the report of the select committee includes many dissenting notes covering largely the method of effecting the insurance. One recommendation advocates a form of state insurance, the premium being included in the motor taxation. A weakness of this scheme lies in the possibility of variations being made in the additional taxation to cover the premium on third party insurance to meet the exigencies of provincial finances rather than the requirements of the public. Some would oppose third party insurance *in toto* on the ground that no such imposition is made in the case of railway transport. As the Member for Communications pointed out, no one who had secured a court decree against a railway had had any difficulty in realising his money. But the majority of bus owners have slender financial resources and are often forced to go into liquidation, so that the prospect of realising a claim against such owners is distinctly remote.

Winding up the debate, Mr. Clow stated that the country needed both railways and road transport. There was, therefore, no ground for apprehension that co-ordination would be used unfairly. He referred to the tendency of motor transport to concentrate on the main roads and overwork these, while the rural areas which needed development remained neglected. To the speakers who had referred to the danger of driving people out of employment, Mr. Clow answered that over 700,000 people employed on the railways also deserved consideration. The honourable member said that the provisions of the Bill meant a closer contact between the Provincial Governments and the railways.

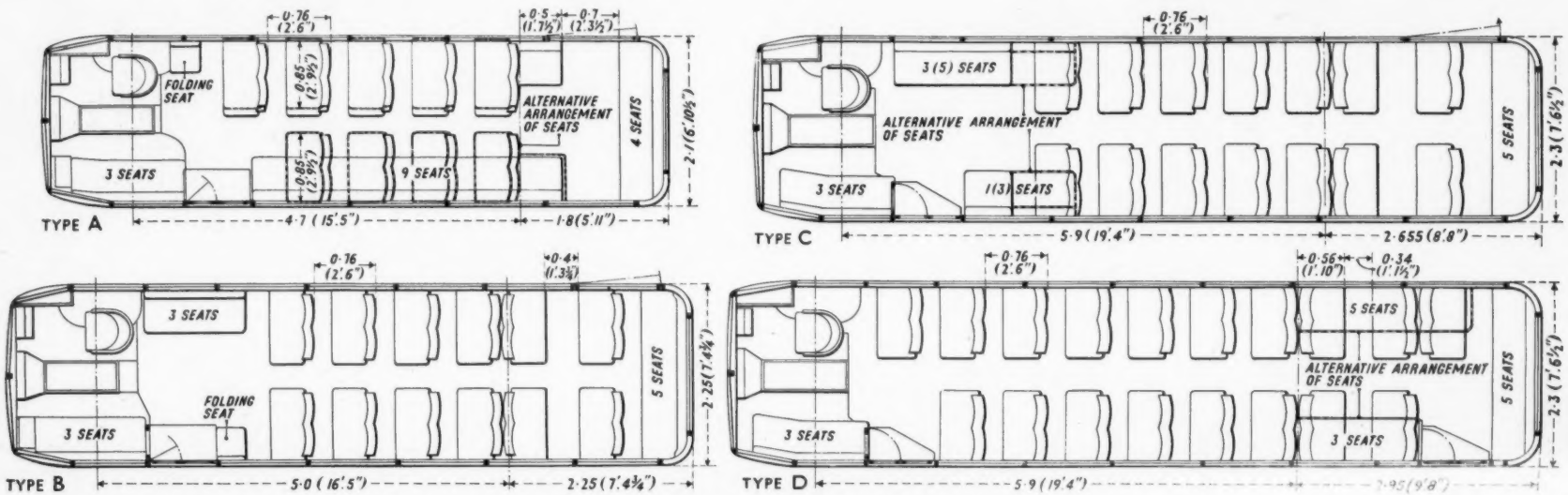
Publications Received

Aldershot and District Traction Co. Ltd. By Charles E. Lee. London: The Omnibus Society. 8½ in. × 6½ in. 12 pp. Price 6d. net.—Although this booklet gives some of the facts and figures relating to the present-day working of the company forming its subject, the matter, both written and pictorial, is mainly historical. In conformity with the objectives of the society, of which its author is chairman, it places on record some early motor transport experiments, and shows how their extension, embracing and absorbing similar developments on a less ambitious scale, has resulted in the formation of a very considerable commercial undertaking linked financially, and for purposes of co-operation, with the Southern Railway. The author is so well known for his researches into transport facilities of the near and more distant past that his present work will not need our commendation. It is a valuable little document, which, though primarily intended for circulation among members of the society, can also be purchased. Application should be made to Index Publishers (Dunstable) Limited.—S. M.

XUM

A 35-seat bus of a type (B) of which the Swedish State Railways have 89, mainly on the west coast

The newest and largest bus in the service of the Swedish State Railways, which has 20 of this type (D) in use



Standard bus seating arrangements for the fleet of the Swedish State Railways

The Road Services of Sweden

Some 270 railway-owned buses maintain 2,268 miles of feeder route ; and the Post Office operates 116 vehicles on 39 services for passengers and mails

THE three major systems of inter-community bus traffic in Sweden comprise a road bus system and a service of railbuses both under the management of the Swedish State Railways, and a network of road bus routes operated by the Swedish Post Office.

Although in June, 1911, the Swedish State Railways opened an unpretentious bus route 6 km. long between Tanün and Gräbbestad in Western Sweden, the nucleus of the present motorbus system, covering the west coast and including scattered services round Stockholm, the Gulf of Bothnia, and northwards to Pajala in the far north, is to be found in two short lines opened in 1921 between Dingle railway station, Hunnebostrand, and Fjällbacka.

Sketch map of the motorbus routes of the Swedish Post Office

As regards the State Railways' road fleet today, vehicles purchased from small private bus lines (all of which, it is felt, will eventually be State-owned), have motors and chassis supplied by many Swedish and foreign builders; but current policy provides for exclusive use of home-built engines and bodies. Hägglund & Sons, of Ornskiöldsvik, built the bodies and the Scania-Vabis Corporation the engines and chassis of the State Railways' own fleet, which, numbering 266 buses (258 petrol vehicles, 6 with motors on the Hesselman principle, and 2 burning crude diesel oil) is classified as follows:—

Type	No. of Units	Passengers	Max. weight lb.	Width in.	Wheelbase in.
A	107	30	4,400	82½	185
B	89	35	5,500	88½	196.8
C	50	40	6,600	90½	232.2
D	20	45	7,920	90½	232.2

The six-cylinder engines of the A and B type buses have a bore of 105 mm. and a stroke of 136 mm., developing 105 h.p. at 2,200 r.p.m.; and those of the new C and D types a bore of 110 mm. and a stroke of 136 mm., developing 120 h.p. at 2,200 r.p.m. Cylinder blocks and heads are of cast iron and the crank-cases are of an aluminium alloy. The chassis is of Swedish steel, stamped in C-section, liberally cross-braced and, in most details of conventional design. Brakes are of the four-wheel, vacuum-operated variety, with a hand lever to actuate the rear-wheel brakes and a foot pedal to apply braking pressure to all wheels.

The shorter A and B buses have service doors at the forward end only, but the C and D types have double-doors at front and back. All buses have ample baggage accommodation and textile upholstered seats, and are painted canary yellow. Operating speeds up to 40 and 45 km.p.h. are maintained at a fuel consumption of about six English miles to the gallon. Local garages are responsible for the daily cleaning, oiling, and tuning up of the buses. Repairs, save those of a major character which are carried out at Örebro in Central Sweden, are also done locally.

Post Office Buses

Under the severe conditions imposed by a northern winter, the Swedish Post Office inaugurated in 1923 a system of buses designed to give certain towns a better service than that provided by the existing railway mail facilities. The 39 routes of this system are operated by 116 buses with Scania-Vabis engines and space for 15 to 22 passengers, maintaining an average speed of 40 km.p.h., some with and some without a goods trailer. On most services there are three trips daily in each direction, and wherever possible the journeys are arranged so that the first bus in the morning leaves town after the arrival of the mail train, and the last trip at night returns to town from the outlying terminus. Snowploughs enable services to be run in winter almost without interruption. Service garages are available on all routes for routine cleaning and minor adjustment, but for major repairs the vehicles are sent to Stockholm. The only other post office bus services in Scandinavia are found in Finland, but owing to the state of the roads, the experiments of the Finnish Post Office with services in Northern Finland have not been entirely successful.

XUM

Overseas Notes

Rail-cum-bus Through Tickets in Calcutta

The terminus of the East Indian Railway serving Calcutta is at Howrah, on the west bank of the River Hughli and some distance from the centre of the city. Arrangements have now been made by which, on and after September 1, season ticket holders living in the E.I.R. suburban area will be able to purchase rail-cum-bus tickets enabling them to travel from Howrah to Dalhousie Square or Esplanade and *vice versa* by bus.

Indian North Western Transport Operating Results

In the Road Transport Section of our issue of July 29, we published a short description of the North Western Transport Co. Ltd. Our correspondent in India now reports that during the month of June this company's buses ran a total distance of 18,550 miles and earned Rs. 5,265. The average number of passengers carried per vehicle was 18 against a carrying capacity of 21. The expenses of operation during the month amounted to about Rs. 4,000.

Road Transport in the Dominican Republic

All commercial transport in the Republic, except for the areas in the north served by the two short railways, is carried by road, says the Report on Economic and Commercial Conditions in the Dominican Republic, issued by the Department of Overseas Trade, published by His Majesty's Stationery Office, 1s. net. There are some 895 miles of highways and 1,466 miles of secondary roads, of which the main roads radiate from the capital, Ciudad Trujillo, in three directions, eastward, westward, and to the north. For passengers there are local services in the cities and also fleets of public cars running on regular schedules. In 1937 licences were issued for 49 buses, 811 public passenger cars (including taxis), 633 private cars, and 727 motor lorries. Practically all these vehicles were of U.S.A. manufacture.

Karlsruhe-Freudenstadt Motorcoach Service

The journey by rail from Karlsruhe to Freudenstadt, in connection with the Rheingold express service from the Hook of Holland, takes over 3½ hr. In order to provide visitors to Freudenstadt with a more convenient service, the Reichsbahn has now introduced a motorcoach service which runs daily until further notice to the following timetable—

Rheingold express arrives Karlsruhe Hbf.		.. .. ..	14·44
Motorcoach	dep.	Karlsruhe Hbf.	14·55
	arr.	Freudenstadt Marktplatz	16·53
	,,	Freudenstadt Hbf.	17·01
return	dep.	Freudenstadt Hbf.	18·05
	,,	Freudenstadt Marktplatz	18·12
	arr.	Karlsruhe Hbf.	20·10

It will be seen that Freudenstadt is reached in 2 hr. from Karlsruhe; the journey by road is through one of the most picturesque parts of the Black Forest. The ordinary motor coach fare is RM. 3.80 single, but rail tickets are interavailable for rail or motorcoach over this section. Holders of first and second class 60 per cent. reduced-rate rail tickets pay no supplement, holders of third class 60 per cent. reduced-rate tickets pay a supplement of RM. 0.50 when using the motorcoach.

An Air-Conditioned Bus in the U.S.A.

One of the long-distance Greyhound buses in the U.S.A. has been fitted experimentally with air-conditioning apparatus. The compressor and its ancillary equipment are located below the floor and between the wheels, and driven by an auxiliary petrol engine. The refrigerant is piped to the roof at the rear of the coach, where are situated the evaporator and motor-driven blower, which blow into the coach a mixture of filtered fresh and reconditioned air.

Fish by Reichsautobahnen

At a recent Stuttgart conference, Herr Körner dealt with various German shipping problems, and said, *inter alia*, that there was still room for improvement in the relation between maritime and inland transport. This was particularly true in regard to the development of German high-sea fisheries, which still suffered from inadequate consumption of fish in the interior of the country. It was proposed, therefore, he stated, to improve the distribution by services of special road vehicles on the *Autobahnen*.

Rhodesian Railways Road Services

The Rhodesian Railways Bulletin for June, 1938, quotes the results of working of the company's road motor services during the month of April, 1938, when 52,308 lorry miles and 23,310 trailer miles were run, 3,710 tons of merchandise were carried and 1,517 gallons of cream. The number of vehicles in service on April 30 totalled 43, and the types were as follow :—

1 Morris 2-ton 6-wheeler.
5 Thornycroft 2½-ton 6-wheelers.
9 Thornycroft 3-ton 6-wheelers (including 3 fitted with diesel engines).
21 Thornycroft 5-ton 6-wheelers (including 3 fitted with diesel engines).
1 Thornycroft 2½-ton 4-wheeler.
2 Thornycroft passenger vehicles (4-wheeled), one fitted with diesel engine.
1 Dodge 2½-ton 4-wheeler.
2 Leyland 7-ton 6-wheelers, fitted with diesel engines.
1 Albion 4-ton 4-wheeler, fitted with diesel engine.

A recent view on one of the Rhineland Reichsautobahnen near Cologne showing how the name of a town is prominently displayed on the bridge forming part of the flying-junction connecting road. Drivers are thus given appropriate intimation of the approach of the bifurcation

RAILWAY NEWS SECTION

PERSONAL

Sir Joshua Scholefield, K.C., Chairman of the Railway Assessment Authority, who is also Recorder of Middlesbrough, has been temporarily appointed Recorder of Newcastle.

We regret to record the recent death of Mr. William Hirst, M.S.A., in his 91st year. Mr. Hirst was prominently identified with the early activities of the Permanent Way Institution, being elected a Fellow in 1886 and serving as President in 1898-99.

Mr. Frank Simpson has been appointed Assistant to the Vice-President of Operation, Montreal, Canadian National Railways. He is a native of Aberdeen, and began his railway career with the former North British Railway, which he joined in 1906. Mr. Simpson went to Canada in 1911.

Mr. Thomas W. Hulme retired on August 31 from the position of Vice-President of the Pennsylvania Railroad in charge of real estate, valuation, and taxation.

Mr. Charles D. Young, Vice-President in charge of purchases, stores, and insurance, has assumed charge of Mr. Hulme's duties in addition to his own, with the designation of Vice-President in charge of real estate, purchases, and insurance.

Mr. Hulme was born in 1868 at Mt. Holly, New Jersey, where he was also educated prior to matriculating at the University of Pennsylvania; there he graduated as B.Sc. and Civil Engineer in 1890. He then joined the Real Estate Department of the Lehigh Valley Railroad, where he remained for 14 years until he transferred to the corresponding department of the Pennsylvania. After some years of experience in connection with tunnel lines and terminal improvement programme, and other important developments, he was promoted to be Real Estate Agent of the lines east of Pittsburgh, and later for the entire system. Mr. Hulme was elected a Vice-President in 1924, the position from which he now retires. He is a Director of the Pennsylvania and several of its subsidiary companies. He is one of the best-known authorities on railroad valuation, and for more than 20 years has been Vice-Chairman of the executives' conference committee, representing railway interests in the valuation of their properties, under the Interstate Commerce Commission.

We regret to record the death on September 19, aged 59, of Mr. Ernest Taylor, late Chief Accountant, London Midland & Scottish Railway. Mr. Taylor was obliged to retire from that position owing to ill-health at the end of last October, as recorded in our issue of November 5, 1937. Mr. Taylor entered the service of the former Midland Railway on March 1, 1893, in the Accountant's Department, where he served for a time more particularly in the Joint Lines Section. On January 1, 1920, he was appointed Chief Clerk to the Accountant, and on the formation of the L.M.S.R. became Chief Clerk to the Accountant-General. On January 1, 1928, he was appointed Assistant to the Controller for Costs and Statistics. Mr. Taylor was promoted to Chief Accountant, L.M.S.R., in 1930. For the three successive years 1935-37 inclusive he held the office of Chairman of the Accountants' Standing Committee, Railway Clearing House.

The late Mr. Ernest Taylor
Chief Accountant, L.M.S.R., 1930-37

We regret to record the death on September 19, at the age of 83, of Mr Samuel Bower, formerly Chief Accountant of the Midland Railway. He entered the service of that company in 1869 as a junior clerk in the Merchandise Audit Office, and remained there until 1878, when for two years he was engaged on special duties. In 1880 he was appointed an assistant in the Merchandise Office, and in 1904 was made Chief Clerk to the Accountant's Department. In 1905 Mr. Bower was appointed Assistant Accountant, succeeding Mr. A. W. Allen. Promotion to Chief Accountant in succession to Mr. W. Bailey followed in 1917. He retired in 1920, but for some time retained the capacity of Consulting Accountant to the Midland Railway Company.

Mr. Robert Holland-Martin, Chairman of the Southern Railway, will preside at the seventy-seventh anniversary festival in aid of the funds of the United Kingdom Railway Officers' and Servants' Association, to be held at the Trocadero Restaurant on October 20.

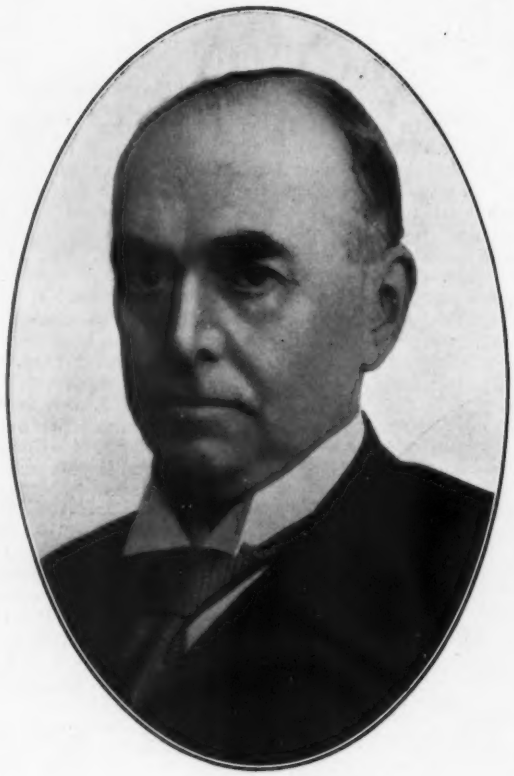
From *The London Gazette* of August 20: The King has been graciously pleased to confer the Efficiency Decoration upon the following officers of the Royal Engineers, Engineer & Railway Staff Corps:—

Colonel Sir R. L. Wedgwood, C.B., C.M.G.

Lt.-Colonel R. J. M. Inglis, M.Inst.C.E.

Mr. Tom May will retire on September 30 from the service of Pritchett & Gold & E.P.S. Co. Ltd., electric battery maker, with which firm he has been for 41 years. Since 1923 he has acted as outdoor representative, keeping in touch with the relevant departments of the railway companies. Mr. May joined the firm as a workman in the shops, and was subsequently employed on outside erection and inspection.

We regret to record the sudden death at Brighton on September 20, at the age of 57, of Mr. Robert Gurd, Assistant in the office of Mr. C. V. Hill, Divisional Engineer, Brighton, Southern Railway. Mr. Gurd joined the former London Brighton & South Coast Railway as a carpenter in 1895, and had been in the Engineer's office at Brighton in various capacities since 1909. He was prominently identified with the activities of the Permanent Way Institution, being a Member of Council, Corresponding Secretary of the Brighton Section from its inception, and Secretary of the institution's Education



Sir David J. Owen
General Manager, Port of London Authority, 1922–38

Mr. J. D. Ritchie, M.C.
Appointed General Manager, Port of London Authority

Committee. Mr. Gurd was also a keen archæologist and an active member of the Sussex Archæological Society.

Sir David J. Owen, who retires on September 30 from the general managership of the Port of London Authority, was born in 1874, and educated at Liverpool Institute. After serving with the Mersey Docks & Harbour Board and on the staff of Paul Brothers, he was appointed Manager of Goole Docks. In 1915 he became General Manager, Belfast Harbour Commission, and assumed his present position of General Manager, Port of London Authority, in 1922. He received his knighthood in 1931. Sir David Owen is a Past President of the Institute of Transport, and is a member of the Central Water Advisory Committee; Chairman of the Anglesey and Caernarvon Agricultural Wages Committee; Past President, National Confederation of Employers' Organisations; Treasurer, National Council of Port Labour Employers; and a member of the Executive Committee of the Dock & Harbour Authorities' Association. In the past he has been a member of the Royal Commission on Lotteries and Betting, and of the Holidays with Pay Commission. He has the rank of Lt.-Colonel in the Territorial Army. Sir David Owen is the author of the following books: "A Short History of the Port of Belfast"; "A History of Belfast" and "The Port of London—Yesterday and Today."

Mr. William Bingham
District Goods and Passenger Manager, Stoke-on-Trent, L.M.S.R., 1925-38

Mr. J. D. Ritchie, M.C., who will succeed Sir David J. Owen as General Manager of the Port of London Authority as from September 30, entered the service of the authority as Solicitor in June, 1923. From January, 1927, until December 31, 1937, he held the joint office of Solicitor and Secretary, and he has been Deputy General Manager since January 1, 1938. Mr. Ritchie, although of Scottish parentage, was educated at Manchester Grammar School and Manchester University. Before coming to London, he was Town Clerk of Burnley in 1922-23. Prior to

Mr. P. M. Muir
Appointed Comptroller of Stores, New Zealand Government Railways

that he was Assistant Solicitor to the Corporation of Manchester, and held a similar position with the Stoke-on-Trent Corporation. During the war Mr. Ritchie served in France with the 4th Gordon Highlanders and the Tank Corps. In 1918 he was awarded the Military Cross. He was President of the Burns Club of London, 1934-35.

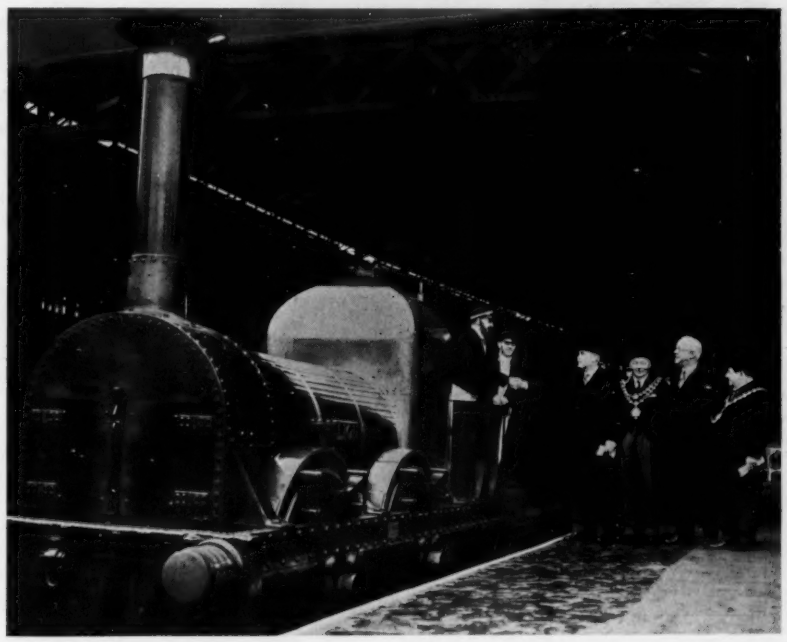
Mr. William Bingham will retire at the end of this month from the post of District Goods and Passenger Manager, Stoke-on-Trent, L.M.S.R., which he has occupied for over 13 years. He was the first Manager appointed when the Districts scheme for the whole of the London Midland & Scottish Railway was initiated, and had the task of moulding the various units within that district, which covered about 1,500 square miles in the counties of Staffordshire, Cheshire and Derbyshire, and included about 120 railway stations as well as the whole length of the Trent & Mersey Canal, into the standards required by the L.M.S.R. arrangements. He began his railway career with the former London & North Western Railway in 1892 at Nottingham. Much of his early training, however, was in Liverpool. After holding goods agencies at Runcorn, and Carlisle, and having Headquarters Office experience, he became Outdoor Assistant at Bangor, North Wales, and subsequently was Assistant District Goods Manager in the Wolverhampton and Liverpool districts. From the latter he was appointed in 1919 to be District Goods Manager in the Warrington District, leaving there for the Stoke District in 1925. During his *régime* numerous progressive measures have taken place, giving additional and improved facilities in various directions for both passenger travel and merchandise.

Mr. P. M. Muir, whose appointment to succeed Mr. S. S. Millington as Comptroller of Stores, New Zealand Government Railways, was recorded in our issue of September 16, joined the Railway Department as a Cadet in the Stores branch at Hillside in 1900, and had considerable experience in various positions in that branch prior to his transfer to the Comptroller of Stores Office, Wellington, in 1913. As a qualified accountant, Mr. Muir served in several responsible positions in the Comptroller's office until his appointment as Stores Audit Inspector in 1925. He was selected as one of the four members of the special committee which was appointed to reorganise the accounting system then in use in the Railway Department. Mr. Muir was also one of the four New Zealand railway officers who attended the first conference of New Zealand and Australian administrative and executive officers held in Sydney in 1926. In 1928 he became Chief Clerk in the Comptroller of Stores Office, and in 1933 was promoted to Assistant Comptroller of Stores.

Centenary Celebrations at Euston

Lord Stamp presides at opening of the centenary exhibition at Euston by the Lord Mayor of Birmingham

Platforms six and seven at Euston were prepared early on Monday morning for the important part they are playing this week as the scene of the L.M.S.R. London & Birmingham Railway Centenary Exhibition. Members of the official party for the opening ceremony, who were received at a few minutes before 11 by Lord Stamp, Chairman of the company, walked to the rostrum between two rows of locomotives and rolling stock dating from 100 years ago to the present day.



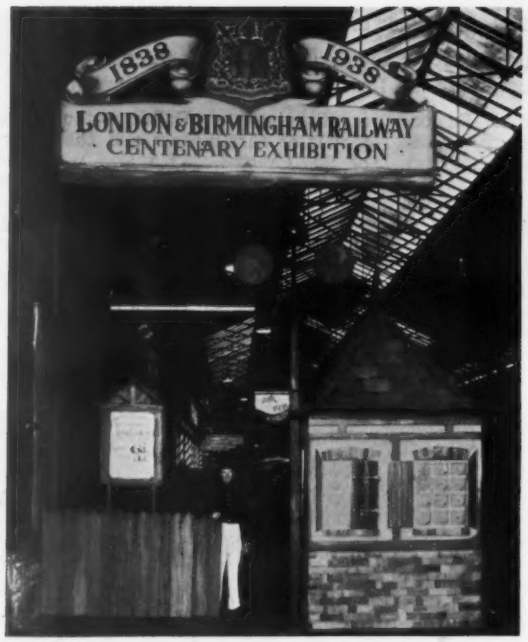
Lord Stamp, Chairman of the L.M.S.R., shaking hands with the driver of the "Lion" locomotive of 1838*; with him are the Lord Mayor of Birmingham (Councillor E. R. Canning), who opened the exhibition, and the Mayor of St. Pancras (Councillor John Sperni)*

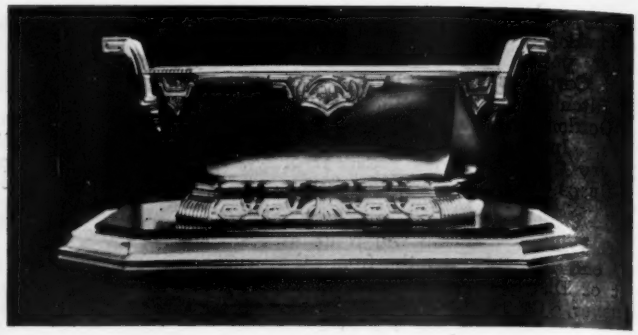
At the head of one line of exhibits, dwarfed by the streamlined form of the 4-6-2 No. 6225, *Duchess of Gloucester*, built at Crewe this year, stood the Liverpool & Manchester Railway locomotive, *Lion*, of 1838, advertising the fact that it was in steam by blowing-off noisily at frequent intervals and temporarily obscuring the swarming press photographers in clouds of vapour. A row of signboards suspended from the station roof quoted contemporary observations on London & Birmingham achievements, one of them comparing the speed of its construction with the more protracted period required for building of the Great Pyramid.

Lord Stamp extended a cordial welcome to the guests who had honoured the company by their presence on that historic occasion, notably to the civic heads of the two ends of the London & Birmingham Railway—the Lord Mayor of Birmingham and the Mayor of St. Pancras. He also welcomed representatives of the L.C.C., the Ministry of Transport, and many other public bodies. The occasion, he said, was not merely an antiquarian orgy, but the representation of 100 years of progress, and it was fitting to celebrate the day on which Euston really became the "Gateway to the North." The London & Birmingham was the first railway linking London with the great centres of population, and now claimed to serve both the first and second centres of population in the country.

"The station in Euston Square" in its early days was a Metropolitan curiosity. It stood amid green fields, and to get to it brought a very good chance of adventures with footpads. At that time it had two platforms only, and even today the iron girders in the first eight or nine bays of the roof over where they stood were the actual ones of the original station. Lord Stamp also drew attention to the *Lion* locomotive, and said it was a matter of great human interest that there was present the grandson of its builder—namely Lt.-Colonel Kitson Clarke, who was that day celebrating a 50 years' record as an engineer and builder of locomotives.

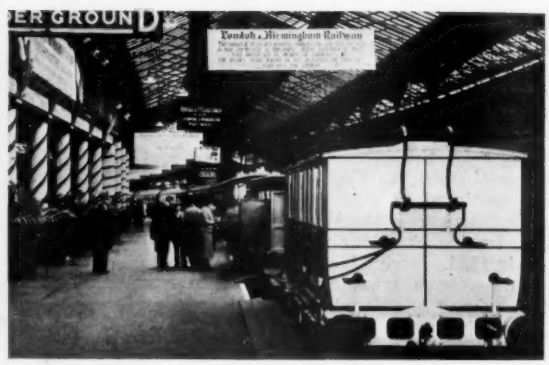
A hundred years ago five hours was the time scheduled for the traveller





Above: Silver-gilt centrepiece presented to the L.M.S.R. Company by the directors to commemorate the centenary

Left: Entrance to the exhibition on platforms 6 and 7, with attendant in costume of early railway "policeman"



Rolling stock exhibits, showing clear system of labelling

Model of Euston station and buildings as they were in 1838, showing typical train and passengers of the period; encircling it is a model track layout with a train and locomotive typifying a 1938 London-Birmingham express. These features were executed by the Northampton firms of Twining Models Limited and Bassett-Lowke Limited respectively

from London to Birmingham, but now they had trains doing the journey in well under two hours. They looked upon the present event not in any sense as a termination, but rather as a beginning, and a milestone of progress. On the preceding day a very successful preview of the exhibition had been given by television, and he looked upon that as a good augury, and emblematic of the way in which the railway drew the very finest knowledge and science from all quarters to its aid. [The actual opening proceedings were also being televised.]

In conclusion Lord Stamp read the following telegram which he had received from the Postmaster-General: "Warm congratulations on the anniversary you are celebrating today, and all good wishes to the L.M.S. in its second century."

The Mayor of St. Pancras (Councillor John Sperni, J.P.) then spoke, and said that in accordance with civic etiquette and custom he extended a most hearty welcome into the Borough of St. Pancras to the Lord Mayor of Birmingham. St. Pancras was very proud that the pioneer of the present great railway decided to establish its principal station within its boundaries. In fact it was the great termini inside its limits that had made St. Pancras what it was today. A very large proportion of its community was composed of employees of the L.M.S.R., and those employees were also represented on the Borough Council. Great undertakings required great men, and it was because they had at the head of this undertaking men of the calibre of Lord Stamp that the L.M.S.R. could claim to be what it was today. Great railways, like great roads, were the sinews of the nation, but railways could become great only with a proper and efficient administration. He extended the good wishes of the borough and his most sincere civic support to the exhibition.

The Lord Mayor of Birmingham (Councillor E. R. Canning, J.P.) then declared the exhibition open. He said the link of communication they were celebrating that day had a great influence on the City of Birmingham. The year 1838 must have been a great era in the history of this country. Not only was Queen Victoria crowned, but it saw the first regular crossing of the Atlantic under steam power, and the appearance of a report on the penny post, soon afterwards instituted. In 100 years, Birmingham had not known a boom like that when the railway company was being projected.

They were now celebrating a very great tradition. Railway companies from their earliest days earned the confidence of the public, and had extended a courtesy to their customers that had even increased during the last few years. On a recent journey by L.M.S.R. he had been impressed by the fact that instead of patrons in the restaurant cars being requested to register complaints, they were asked to inform the company of any special service.

Whether Birmingham was the second largest city in the country or not, he was convinced the wonderful service the L.M.S.R. had given them had a very great influence on its success and progress. Thirty-six years ago the two-hour London—Birmingham train service had been instituted, and lately a few further minutes had been saved. That wonderful daily service had a great influence on the City of Birmingham.

Birmingham had given the initiative to the world in different ways, and they could add a railway guide to the long list. George Bradshaw's first guide was published in 1839, but James Drake produced a little guide in July, 1838 which was sold in a canvas case for 2s. It enjoined gentlemen's carriages and horses to be at the station a quarter of an hour before the hour of departure, and observed that trains would leave each station as soon as ready without reference to the time stated in the table, the object being to perform the journey as expeditiously as possible.

At the present time there was a feeling of crisis in the air, and he was convinced that in any eventuality they would be more thankful than they knew to the efficient condition of the railways. He hoped nothing in the future would prevent them being as efficient as in the past, and a great national asset.

The Exhibition Inspected

To mark the opening of the exhibition, the *Lion* locomotive was then driven out of the station by Lt.-Colonel Kitson Clark—grandson of its builder—with the Mayor of St. Pancras on the footplate. Lord Stamp invited the Lord Mayor of Birmingham to entrust himself to his care on the footplate of *Duchess of Gloucester*, proceeding to drive that locomotive into the station yard in the wake of the *Lion*.

An inspection was then made of the exhibits drawn up at the platforms, described in our issue last week. Platform 6 is devoted largely to demonstrating rolling stock progress, with the royal saloons of Queen Adelaide and Queen Victoria as examples of the finest coachbuilding practice of earlier years. At the head of the coaches stand the *Duchess of Gloucester* and the *Lion*.

Opposite, the "George V" class 4-4-0 *Coronation*, built in 1911, stands next to the 8-ft. 6-in. single-driver locomotive *Cornwall*, brought to the exhibition from its usual stance in the paint shop at Crewe, where it is now preserved. The trio is completed by No. 3 of the former Furness Railway, informally known as "Old Coppernob," and the only survivor of the famous Bury engines in the exhibition. A modern L.M.S.R. buffet car brings up the rear of this historic file. A full-size model of the *Rocket* in its original form is also shown.

The entrance to the passage leading from the platforms to the Great Hall, and so to the indoor section of the exhibition in the shareholders' meeting room, has been disguised to represent the portal of Kilsby tunnel, and admits visitors to a few yards of appropriately cavernous blackness achieved by concealing the glazed tiles of the passage behind dark hangings. Prominent among the fine collection of early permanent way, documents, timetables, prints, and seals of constituent railways in the indoor exhibition is a massive silver-gilt centrepiece presented to the company by the directors to commemorate the centenary. A model of Euston station in 1838 shows the layout of the approach lines and platform roads, with its battery of turntables for coaches at each end of the building. A departing train is represented, and figures in the coaches and at the station add life to the scene. Around the table on which this display is set runs a working model railway, with a modern express appropriately bearing Centenary headboards to depict London—Birmingham rail transport in its latest form. The last word in communication between the two cities is represented by a model R.A.S. air liner.

Among the directors and officers of the L.M.S.R. present were:—

Lord Stamp (Chairman), Mr. E. B. Fielden (Deputy Chairman), Sir Robert Burrows, Sir Ralph Glyn, Sir Guy Granet, Sir Robert Greig, Mr. W. L. Hichens, and Sir Thomas Williams (directors).

Sir Harold Hartley, Sir William Wood (vice-presidents), Mr. Ashton Davies (Acting Vice-President), Mr. O. Glynne Roberts (Secretary and Assistant to President), Mr. G. Royde Smith (Assistant Secretary), Mr. A. Eddy (Solicitor).

Messrs. T. E. Argile (Acting Chief Commercial Manager), H. E. Horne (Acting Assistant Chief Commercial Manager), J. Ballantyne (Chief Officer for Scotland), T. W. Royle (Chief Operating Manager), F. A. Pope (General Assistant to Chief Operating Manager), A. F. Bound (Signal and Telegraph Engineer), C. E. Fairburn (Deputy Chief Mechanical Engineer and Electrical Engineer), H. G. Ivatt (Principal Assistant (Locomotive) to C.M.E.), J. Purves (Carriage and Wagon Assistant to C.M.E.), S. J. Symes (Chief Stores Superintendent), G. L. Darbyshire (Chief Officer for Labour and Establishment), G. Morton (Chief Accountant), J. Shearman (Road Motor Engineer), W. H. C. Clay (Estate Manager), S. E. Parkhouse (Divisional Superintendent of Operation, Crewe), G. H. Loftus Allen (Advertising and Publicity Officer), W. C. Brudenell (Press Representative), Capt. J. W. Harris (Marine Manager), Mr. F. Smith (Rating Agent), Mr. H. K. Beale (Messrs. Beale & Co.).

Among the guests of the company were:—

Sir Leonard Browett, Permanent Secretary, Ministry of Transport; Mr. R. H. Hill, Principal Assistant Secretary, Ministry of Transport; Rt. Hon. Herbert Morrison, M.P., London County Council; Sir Cyril Hurcomb, Chairman, Electricity Commission; Mr. E. J. H. Lemon, Director of Production, Air Ministry; Mr. J. Sheppard, Director of Museums at Hull (including Railway Museum); Mr. A. T. Roach, Town Clerk of London; Sir Alexander Gibb, President, London Chamber of Commerce; Mr. W. E. Floyd (Birmingham), Joint Life Governor, Crewe Orphanage; Mr. Ewart G. Culpin, Chairman, London County Council; Lt.-Colonel E. Kitson Clark, Director, Kitson & Co. Ltd.; Mr. J. R. Hind, Press Agent, British Railways Press Office; Major J. M. Dewar, Publicity Officer, G.W.R.; Mr. E. G. Marsden, Information Agent, L.N.E.R.; Mr. J. A. Kay, Editor, THE RAILWAY GAZETTE; Mr. Charles E. Lee, Assistant Editor, THE RAILWAY GAZETTE; Mr. D. R. Lamb, Editor, *Modern Transport*; Professor E. R. Hondelink; Mr. J. N. Maskelyne, President, Stephenson Locomotive Society.

XUM

Fourth International Rail Congress, Düsseldorf

Summary of papers—Programme of Visits

From Monday to Thursday of this week there has been held at Düsseldorf, Germany, the fourth of a series of triennial conferences on the steel rail, the first of which took place at Zurich in 1929. To this year's congress a total of 34 papers has been presented, covering a wide range of matters connected with the manufacture, characteristics, and defects of rails, as well as the effect on rail life of alloys and heat treatments. It is evident from these papers that extensive and thorough research has during recent years been devoted in Continental countries to a problem the importance of which forms the subject of editorial comment on page 511 of this issue.

At the opening session on Monday, presided over by Dr.-Ing. P. Goerens, of Essen, a brief address was given by Dr.-Ing. J. Dorpmüller, German Minister of Transport and General Manager of the German State Railway, who in a happy speech welcomed the 170 foreign delegates to the congress, representing, with 250 German delegates, twenty different nations. He was followed by Dr.-Ing. K. Remy, President of the Reichsbahndirektion at Cologne, who, in a striking address, which we hope to summarise in a forthcoming issue, spoke on the place and importance of railways in the traffic economics of a country. A second address was given by Professor Dr.-Ing. E. H. Schulz, of Dortmund, on "The Rail—a Metallurgical Achievement and a Metallurgical Problem." Among matters of considerable interest touched on by Dr. Schulz were the fact that whereas in earlier International Rail Congresses rail defects had been the subject of many papers, in this congress only two papers were so occupied—in itself a sign that the defective rail, owing to improvements in manufacture, was no longer in Europe the problem that once it had been. Similarly we were learning more about such matters as phosphorus in steel, once regarded as a harmful constituent to be reduced to the lowest possible limits, but now no longer feared, and even regarded—within limits—as a possible assistance to wear. Dr. Schulz also touched on rail testing, and stressed the necessity for methods as simple and as practical as possible, rather than the temptation to employ many different laboratory methods that have little or no relation to actual service stresses. After this introduction, the congress settled down on the following days to the discussion of the remaining papers, which were presented at a series of sessions under the heads that follow.

Track Stresses

Three of the papers in the first session on Tuesday were devoted to problems arising out of the use of very long rails, such as those produced by flash-butt and other methods of welding, and in particular the risk of buckling of track under the influence of temperature changes. It was pointed out that whereas the only stresses hitherto taken into account in calculations of the strength of railway track have been the vertical stresses due to the imposition of loads, in the long-rail or welded-rail track the longitudinal stresses due to totally or partly impeded expansion may be just as great. As has already been proved in America, the heaviest track construction reasonably possible, and with fastenings sufficiently secure to prevent movement of the rails in a longitudinal direction, and so to confine the tendency to expand or contract as a stress within the rail, have been found by experiment (on a special length of experimental track) to be an adequate safeguard. A Hungarian participant suggested a method of fastening flat-bottomed rails to their soleplates by elastic cotters in order to provide a track construction which reduces to a minimum the strains on fastenings and disturbance of the ballast. Another paper in this series deals with internal stresses in the steel of rails as a result of cooling conditions after rolling and of cold straightening, the investigation being based on minute stress measurements by the Röntgen diffraction method. In this paper the somewhat surprising conclusion is reached that stress cracks in the rail-head are almost always longitudinal, and that from these cracks transverse fissures may develop. It is doubtful if this finding would be shared by railway engineers, in America, where hitherto the transverse fissure has been the most prevalent, and is now regarded as the fruit of a generally shatter-cracked condition.

Mechanical Wear and Tear

The first of the papers in the second session advanced theories as to the exact nature of the wear of rails, under the great diversity of the factors that produce it, and in particular the combination of the turning and sliding movement of the wheels, but without coming to any very definite conclusion. Three succeeding papers concerned themselves with attempting to relate physical tests on the steel to its probable wearing capacity. It was pointed out that two materials are concerned in rail wear—the rails themselves and the tyres—and also that the wear conditions of rails and tyres differ widely, so that a steel which in rails may show a satisfactory wearing capacity may in tyres prove to be a poorly-wearing quality, and *vice versa*. It was suggested that the best method of approach to this problem would be to work backwards—that is, to select rail and tyre steels that have given good wear results, and with them to establish methods of abrasion testing, in machines which would incorporate both qualities, from which standards might be established. A striking feature described in this paper was the wear-resisting properties in rails of a steel containing a high silicon percentage (0·75 per cent.) in conjunction with low carbon (0·35 per cent.) and manganese (0·80 per cent.). In another paper X-ray examination of rail steels did not lead to any definite conclusions, as it was not found possible to correlate the results to the methods by which the rails had been produced. The final paper of this session was one dealing exhaustively with the problem of rail corrugation. The author's experience was that this phenomenon appears only on straight tracks and flat curves, and not on sharp curves. With adequate reasons, he dismissed all explanations connecting corrugation with manufacturing conditions, and, although he admitted that there might be other contributory causes, his contention was that the succession of minute oval depressions in the rails which constitute corrugation are wheel impressions. The influence of braking, which so often results in readily-audible rail corrugation at the approach to stations, was also discussed in this interesting contribution.

A Comparison of Rail Steels

One of the most important papers of the series was presented by Dr.-Ing. E. M. Ros, of Zurich, and Dipl.-Eng. A. Bianchi, of Berne, at the fourth session, reviewing recent research on the relative properties of ordinary, compound, and heat-treated rails in test-lengths on the heavily-graded Gotthard section of the Swiss Federal Railways. It would be impossible adequately to review in a few words this comprehensive and detailed analysis, but the conclusions, directed towards maximum wear resistance coupled with freedom from brittleness, were that the essential manufacturing conditions to secure these results are: pure steel; careful deoxidation; suitable chemical composition; and, in the case of alloy steels, the best method of adding each alloy to the steel in the ladle or in the furnace; limitation of maximum carbon content, to avoid brittleness, to 0·7 per cent. in plain carbon steels and 0·4 per cent. in heat-treated rails; adequate cropping of ingots; careful attention to the most suitable size of ingot; wash-heating (*i.e.*, rolling of the ingot in two stages, with an intermediate re-heating or soaking of the blooms); suitable heat treatment in order to obtain a steel of fine grain size, with exact temperature control to secure uniformity of result; controlled cooling of all rails, whether normal, heat treated, or alloy, to prevent fissuring; a slight annealing of the finished rail to 250° C. for 4 hr. in order to increase the resistance to deformation; special rolling methods for flat-bottom rails to ensure freedom for flange defects that might cause fracture; and machine or roller straightening in preference to hand straightening.

The best results in these Swiss tests have been obtained from compound-cast rails, and also heat-treated silico-chromium rails with heads of the so-called "annealed-martensitic" quality; the former have a Brinell hardness on the running surface of 300-350, and the latter of 350-420; after these come sorbitic rails of 280-350 Brinell hardness, then ordinary carbon rails of 250-300 Brinell. It is calculated that with attention to all the considerations enumerated, wear resistance on the Gotthard test length has been increased fivefold, by the use of compound-cast and martensitic silico-chromium rails, and sixfold if the assistance of certain service conditions be included, such as flange lubrication, improvements in locomotive construction, and continuous brakes on freight trains, and all this without any sacrifice of safety. In the improvement of manufacturing conditions in the ways set out in the paper—none of which, of course, is new, with the exception of the final annealing, though their collective importance has not, perhaps, been fully realised hitherto in this country—it was pleasant to hear the tribute paid by the authors to the willing co-operation of the manufacturers. The authors finally claim that the Amsler machine for testing abrasive wear, in their opinion, could be relied on to give a reasonably accurate estimate of the wear resistance of any given rail steel.

Standard Specifications

Another paper in this group, by Dr.-Ing. R. Kühnel of the Reichsbahn, dealt with appropriate acceptance tests for rails, stressing the fact that these tests must be practical and neither too costly nor too lengthy, and also that they must aim at giving some indication of the probable life of the rails under test. The tests regarded as adequate were the tensile test, and the modern development of the falling weight test, which is a combination of impact and bending within certain prescribed limits, together with a static bending test under load. The author desired chemical analysis, but for information only rather than as a ground of acceptance or rejection of rails, and deprecated the cramping of manufacturers by too rigid analysis limits—a matter in which many standard rail specifications are open to criticism. To the tests, gauging of section and surface inspection must, of course, be added. Accompanying this paper is a remarkable tabular statement showing the analyses, physical tests and other requirements of the railways of practically every country in the world, and in view of the diversity of these specifications, the author rightly pleaded for more uniformity in this direction.

General Questions

The third and fifth sessions were devoted to subjects of general importance. Among the papers was the first British contribution to the congress by Mr. Cecil J. Allen, of the London & North Eastern Railway, of which we hope to give a full summary in our next issue, describing the steps with which the Southern Area of that company has proceeded towards a recovery of the work-hardening properties of early steel rails—by the substitution of medium manganese for high carbon steel, controlled cooling, and the Sandberg regulated sorbitic treatment. In another paper Dipl.-Ing. G. Mandel, of the Hamburg Elevated Railway, spoke strongly in favour of the compound-cast rail, which has satisfied the difficult requirements of his line, with sharp curves, having a minimum radius of 3½ ch., gradients as steep as 1 in 21, dense electric service at 2½ min. intervals, and frequent stopping and starting. The compound-cast type of rail is rolled from ingots which are cast from two different types of metal—a relatively mild steel for web and foot and a hard alloy steel for the head, with a readily fusible partition in the ingot-mould which results in a perfect weld between the two qualities. The ingot is then rolled in such a way that the hard steel forms the head of the rail, while the mild steel offers resistance to rupture in those parts of the rail which are subject to the maximum of tensile stress in service. Quench-hardened ordinary rails gave trouble with breakage, the author claimed, but from fracture troubles the compound cast rails had been notably free. At double the cost of ordinary rails the compound cast rails were credited with four times the life; switches and crossings were also now manufactured from rails of this type, and it has been found that the rail-heads can safely be built up with alumino-thermic welding.

Another special type of rail steel, dealt with in a paper by Dr. Richard Walzel, is a pearlitic manganese steel containing approximately 0·6 per cent. of carbon and 1·8 per cent. of manganese with phosphorus and sulphur not exceeding 0·02 per cent., and made in an electric furnace. This has a tensile strength of 57 to 62 tons per sq. in., and the wear of this quality in the high rails of a 9½-ch. curve on the Semmering line, with a 1 in 125 gradient, and on a 12½-ch. curve on the Arlberg route with a 1 in 32 gradient had been only one-third that of ordinary carbon rails. There had also been increased resistance to end battering, and to fracture tendencies at low temperatures. Crossing noses had been forged from this steel and oil-quenched, and with a breaking strength of about 85 tons per sq. in. had shown ten times the resistance of ordinary carbon rail steel to battering.

Rail corrosion formed the subject of a paper by Dr. J. Friedli, of Zurich, and it contained some very interesting findings. It was first shown that corrosion tests in laboratory conditions gave results totally different from the corrosion of rails of the same steel in tunnels. As was to be expected, corrosion losses in tunnels were considerably intensified where the exhaust from steam locomotives was added to the effect of damp conditions. In such tunnels the use of copper as an alloy was shown to be a disadvantage rather than an advantage, whereas atmospheric corrosion in the open air had precisely the opposite effect. Heat-treated steels, on the other hand, especially those with the sorbitic structure, showed worse resistance to corrosion in the open air, and better resistance in tunnels, than the inherently hard steels. The best type of steel for tunnel use where there is corrosion without smoke—*i.e.*, on electrically operated lines—was found to be a hard steel with a uniformly eutectoid structure.

Two further papers concerned themselves with questions of rail profiles, one going into the effect on rail life and resistance to fracture of variations in profile, and the other suggesting an improvement in the web profile of flat-bottomed rails, tapering outwards towards the head, to give additional strength in the vertical plane. Another paper in this section dealt with a new method of designing the grooves in the rolls for flat-bottomed rails, in order to reduce the weakness that is often found in the foot of rails of this section, and is the cause of fractures of rails at the falling weight test. This method, patented by the Vereinigte Steelworks, appeared to give a better flow of the metal in rolling, and to increase the resistance of the rail-foot to shock stresses.

A comprehensive paper by Reichsbahndirektor V. Herwig dealt with the methods adopted by the State Railway in recording and classifying rail defects, and included a typical rail defect form. Careful statistics are kept, and already the deductions drawn from them have been successful in finding and eliminating the causes of breakage, so that, with due regard to loads and speeds, rail breakages have been materially reduced in numbers.

Welding

The sixth and final session of the congress was devoted to five papers dealing with various aspects of rail-welding. One of the papers was concerned with the latest development of alumino-thermic welding of rail-joints *in situ*, and reported favourably on the welding of worn rails into long continuous lengths, in which at the same time the battered rail-ends were built up to a level surface. The writer laid stress on the desirability of obtaining rail steels with high yield points, if the practice of long rails were to be further developed, in order to minimise the risk of buckling in hot weather and fractures in cold weather. A paper describing tests on resistance-welded and arc-welded rails showed, with the help of the alternating bend test, that there was still room for improvement in welding methods, as the fatigue strength of

XUM

various joint welds tested was only from 31 to 56 per cent. of that of the rail steel.

Another paper investigated the defects encountered in different methods of rail welding; in the alumino-thermic method the weld metal was poured in considerable volume round the rail, and the usual solidification phenomena of a cast ingot were therefore met with; in resistance welding the rail-ends were decarburised owing to the high heat under free access of air, and by pressing the rail-ends together the flow-lines of the rolled fibres were disturbed; in the oxy-acetylene process, although there was the advantage that any materials may be added at will and the properties of the weld may thus be influenced, there was also the disadvantage that a reaction of the slag with the metal deposited was not possible, so that oxide films and gas bubbles remained trapped in the weld. Electric-arc welding, in the opinion of the writer, was the most promising in the direction of producing the ideal joint—one in which the joint itself corresponds as closely as possible to the rail in both properties and section—for by the use of covered electrodes deoxidation of the weld metal and ready separation of the slag were possible, and by concentrating the welding heat on a small area good penetration was achieved, while a small volume only of the rail metal was affected. A second paper on irregularities concentrated on resistance welding, and described how defective welds had been minimised by the introduction of hydraulic control of the movement of the carriages supporting the rails during the welding operation.

The final paper of the series was one stressing the importance of uniform conditions for the examination and acceptance of welded rail joints. As regards tests, a fundamental principle was to state the test properties of the weld as a percentage of those of the rail steel; tensile and notched bar impact tests were of use as information only, and the static bending test was regarded as of considerably more value than the impact bending test.

Works Visits

In connection with the congress, in addition to an official reception by the city of Düsseldorf, a large number of works visits was arranged. Rail rolling mills included Bochumer Verein at Bochum, the Hoesch works at Dortmund, the August Thyssen works at Duisburg, the Krupp works at Rheinhausen, and, at the conclusion of the congress, the Neunkirchen, Röchling'sche, and Burbach-Eich-Dudelingen works in the Saar area, the Klockner works at Osnabrück, and the Maximilianshütte works at Rosenberg, Bavaria. The two last-mentioned were for the purpose of seeing the manufacture of compound-cast and heat-treated martensitic rails respectively. Other visits were to the rail-welding plants of the Wanheim Ironworks at Duisburg, and the Theodor Wuppermann works at Leverkusen-Schlebusch, as well as to the Kaiser Wilhelm Institute of research in ferrous metals at Düsseldorf. The visits to the Wanheim and Wuppermann works enabled delegates to see the process of rail welding, to which we make editorial reference on page 509.

Charing Cross (District Line) Collision

Several members of the staff blamed in Inspecting Officer's Report

The original cause of the fatal collision on the District Line near Charing Cross has been known from the first day of Lt.-Colonel E. Woodhouse's inquiry, reported in THE RAILWAY GAZETTE for May 27. It was then stated by Mr. J. P. Thomas, then General Manager (Railways), London Passenger Transport Board, that it was a wrong connection, made by the mistake of an installer, in the control circuits of the eastbound starting signal at Charing Cross, allowing the signal to clear with a train still in the section ahead; this led eventually to an Inner Circle train colliding with one going to Barking, with serious results, six lives being lost. Several motormen had already suspected or noticed the false signal indication and some had narrowly escaped colliding with the train ahead of them. Warning reports had reached Foreman Foskew at Temple station and eventually also an Inspector at Charing Cross, after some misleading telephone messages had been sent, but effective steps were not taken to meet the danger until it was too late. At the inquest, reported in THE RAILWAY GAZETTE for June 3 and 10 the jury attributed negligence to Chief Lineman Beer, who had not tested Installer Eeles's work, and contributory negligence to Foreman Foskew.

Lt.-Colonel Woodhouse's report, a summary of which will appear in our pages in due course, places responsibility for the accident on several persons, some on the installer for his initial error, and a large share on the chief lineman for his omission to test what the former had done, though this "was in no sense deliberate." Foreman Foskew, it is said, must share responsibility with the lineman, but his negligence is declared to be "the more serious" for "on none of the three occasions on which a dangerous failure was reported to him did he take the trouble to follow the matter up personally." After the accident, however, "he showed commendable initiative in organising and conducting rescue work." Porter Hopkins, under his orders, is held to blame for carelessness as he had "no excuse for garbling the second message," though he may have misunderstood what was first shouted to him. Inspector Barnes, Charing Cross, is criticised for not acting promptly—which it is considered he had time to do—when he learnt the true state of affairs, and indeed failure on the part of the traffic staff to take preventive action is described as "perhaps the most regrettable feature of the case." The motormen concerned are commended for their alertness, and Motorman McLean, of the Circle train, is relieved of all responsibility. The tail light he saw was easily to be mistaken, at first at all events, for a signal he was expecting to sight.

Strict and immediate compliance by station staff with an existing rule covering signal failures would have been sufficient to prevent the accident, but amplification of its terms is recommended. The rule concerning switching off the traction current is held to be "adequate under present conditions" but reconsideration is called for when emergency tunnel lighting equipment, now to be installed on the District and Metropolitan Lines, is put in. The question of improved tail lights, already for some time under discussion with the board, is referred to, and "a method of marking the rear of a train, sufficiently distinctive to be immediately recognisable," is recommended. Most of the injuries to passengers were apparently due to broken glass and the recent decision to adopt safety glass by degrees instead of plate glass, for draught screens and end windows is approved.

The new rolling stock for the District and Metropolitan Lines will be so fitted and will have improved couplers, end doors unlikely to jam, and low voltage lighting with secondary battery stand-by. Twin electric tail lamps will also be provided, quite independent of the traction supply. The maintenance of the lighting for as long as possible after the accident is considered to have contributed to the absence of panic, upon which several witnesses commented.

LICENSING CIVIL AIR SERVICES.—Regulations for licensing internal air lines in Great Britain under the Air Navigation (Licensing of Public Transport) Order, 1938, came into force on September 16. Licensees are to make monthly returns of their activities to the licensing authority, whose first members are Mr. Trustram Eve, K.C. (Chairman), Major-General Sir Frederick Sykes, and Mr. F. R. Davenport. Applications for licences will be published to give an opportunity of making representations regarding them, which may be followed by private or public hearings.

MINISTRY OF TRANSPORT ACCIDENT REPORT

Oakley Junction, L.M.S.R., January 21, 1938

At about 3.2 p.m. the 2.10 p.m. express, St. Pancras to Bradford, overran the junction home signals at Oakley, and, being diverted to the Northampton branch, collided head on at about 25 m.p.h. with the engine of a stationary empty carriage train; two passengers were killed and a dining car attendant fatally injured; 41 passengers and 5 railway servants were injured. The accompanying diagram shows the lines and signals concerned in the collision, which occurred on a fine clear day. Lt.-Colonel E. Woodhouse conducted the inquiry.

The express consisted of seven bogie corridor coaches, the second a restaurant car, drawn by a 4-6-0 engine; the total weight was 350 tons. Engine and tender had steam brake working with vacuum on the train, giving a combined brake ratio of about 75·7 per cent. All coaches had steel underframes, shock absorbing buffers and wood-framed bodies, partly or wholly steel panelled. The empty train had a 2-6-0 engine and 20 bogie corridor coaches. The two leading carriages of the express were partly wrecked, the restaurant car finally turning over on its side; the three leading coaches in the empty train were demolished. Beyond these vehicles, there was little damage. The gas carried on the restaurant car escaped harmlessly.

The empty train, worked as a special from Bradford, was due at Oakley junction, on its way to Olney, at 11.15 a.m., but arrived at 2.30 p.m., about half an hour before the accident. Signalman J. Finnerty shunted it to the down branch in order to clear the up fast and leave the up branch free. Obtaining fresh instructions, the train being so late, he was told to stable it at Oakley junction, putting as many coaches as possible in the Way and Works siding. He told Guard Turner about this at 2.41 p.m. An up express passed at 2.46 p.m. and Finnerty set the road to the up fast, but there being no response to his hand signal he reset it again, as he was expecting the down express to be offered. It then occurred to him that he might put the engine and nine coaches (all that could be put in the Way and Works siding) on the up fast, so he set the road again and once more showed a hand signal, perhaps as late as 2.55 p.m.

Guard Turner took some time in dealing with the uncoupling, first applying a hand brake in the twentieth coach and later scotching the wheels of the tenth. He then saw the green flag from the box. Driver Cox drew forward a short way and stopped and Turner walked forward. He then saw Finnerty signalling the train back, so warned Cox to go gently, fearing overrunning of the scotch. Cox did so, but brakes were holding the 11 detached vehicles. Neither man realised the engine was on track circuit 886 (see plan), but Cox got down and saw that the leading wheels were on it, about 2 ft. from the insulated joint. Returning to the footplate he saw the express approaching and was rather seriously injured in jumping off. Turner had originally alighted from the train near where he later uncoupled the ninth coach before passing the ground frame but did not think to telephone instead of walking 400 yd. to the box. He was concerned to get the train inside the No. 21 catchpoints, not then knowing where track circuit 886 terminated.

Cox gave evidence concerning the

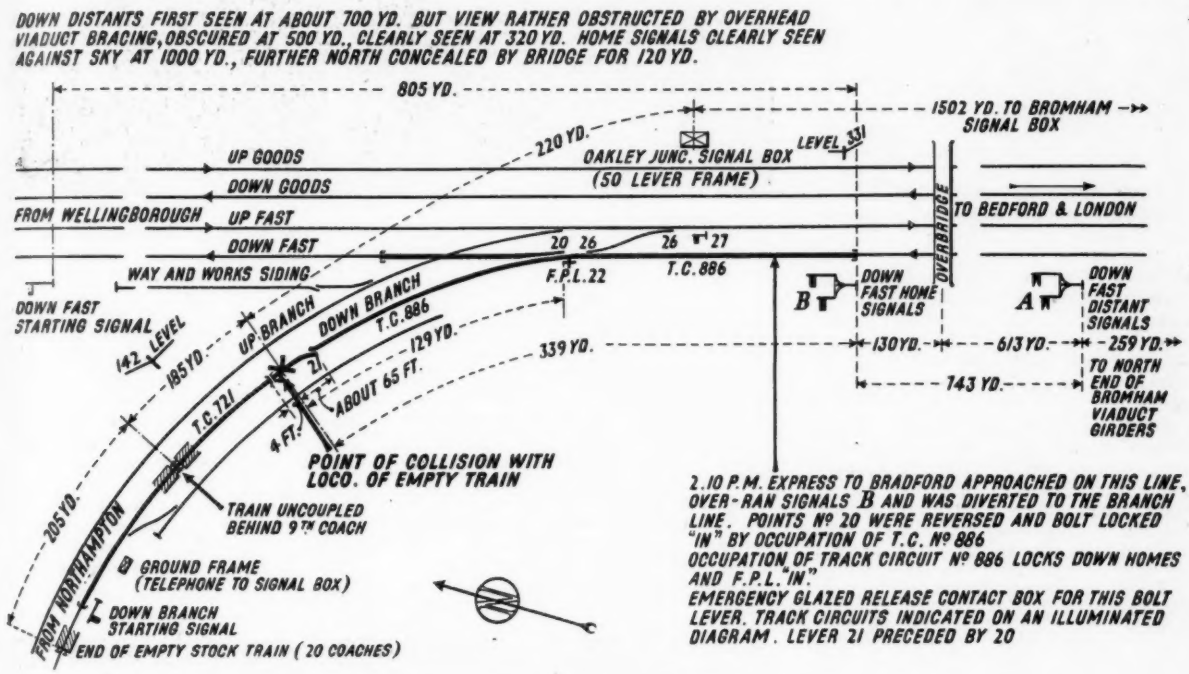

DOWN DISTANTS FIRST SEEN AT ABOUT 700 YD. BUT VIEW RATHER OBSTRUCTED BY OVERHEAD VIADUCT BRACING, OBSCURED AT 500 YD., CLEARLY SEEN AT 320 YD. HOME SIGNALS CLEARLY SEEN AGAINST SKY AT 1000 YD., FURTHER NORTH CONCEALED BY BRIDGE FOR 120 YD.
805 YD.
1502 YD. TO BROMHAM SIGNAL BOX
220 YD.
OAKLEY JUNC. SIGNAL BOX (50 LEVER FRAME)
LEVEL 331
UP GOODS
DOWN GOODS
FROM WELLINGBOROUGH
UP FAST
DOWN FAST
TO BEDFORD & LONDON
OVERBRIDGE
20 26
26 27
WAY AND WORKS SIDING
F.P.L.22
T.C.886
DOWN FAST STARTING SIGNAL
142 LEVEL
185 YD.
UP BRANCH
DOWN BRANCH
T.C.886
129 YD.
339 YD.
T.C.721
21
ABOUT 65 FT.
4 FT.
B
DOWN FAST HOME SIGNALS
A
DOWN FAST DISTANT SIGNALS
130 YD.
613 YD.
259 YD.
143 YD.
TO NORTH END OF BROMHAM VIADUCT GIRDERS
POINT OF COLLISION WITH LOCO. OF EMPTY TRAIN
TRAIN UNCOUPLED BEHIND 9TH COACH
205 YD.
FROM NORTHAMPTON
GROUND FRAME (TELEPHONE TO SIGNAL BOX)
DOWN BRANCH STARTING SIGNAL
END OF EMPTY STOCK TRAIN (20 COACHES)
2.10 P.M. EXPRESS TO BRADFORD APPROACHED ON THIS LINE, OVER-RAN SIGNALS B AND WAS DIVERTED TO THE BRANCH LINE. POINTS No 20 WERE REVERSED AND BOLT LOCKED "IN" BY OCCUPATION OF T.C. No 886
OCCUPATION OF TRACK CIRCUIT No 886 LOCKS DOWN HOMES AND F.P.L. "IN."
EMERGENCY GLAZED RELEASE CONTACT BOX FOR THIS BOLT LEVER. TRACK CIRCUITS INDICATED ON AN ILLUMINATED DIAGRAM. LEVER 21 PRECEDED BY 20

Diagram showing circumstances of accident at Oakley Junction, L.M.S.R.

position of the train, the action taken by Guard Turner, the signals to move forward and set back made from the box, and the movements of his engine.

Signalmen Finnerty, 42, with 12 years as signalman and a good record, had been at Oakley junction for a year. The present box was brought into use six weeks before the accident, with new track circuits, No. 886 being one. Formerly No. 721 extended through the catch points. It was Finnerty's 27th turn of duty in charge since the new track circuits were brought into use. He had not blocked back on the main line in anticipation of the shunting movement, and at 2·57 p.m. was offered the down express from Bromham signal box, when he was signalling the empty train forward for the second time. He accepted it without re-setting the junction facing points, re-set the crossover, and attempted to alter the former but found the levers locked by track cir-

XUM

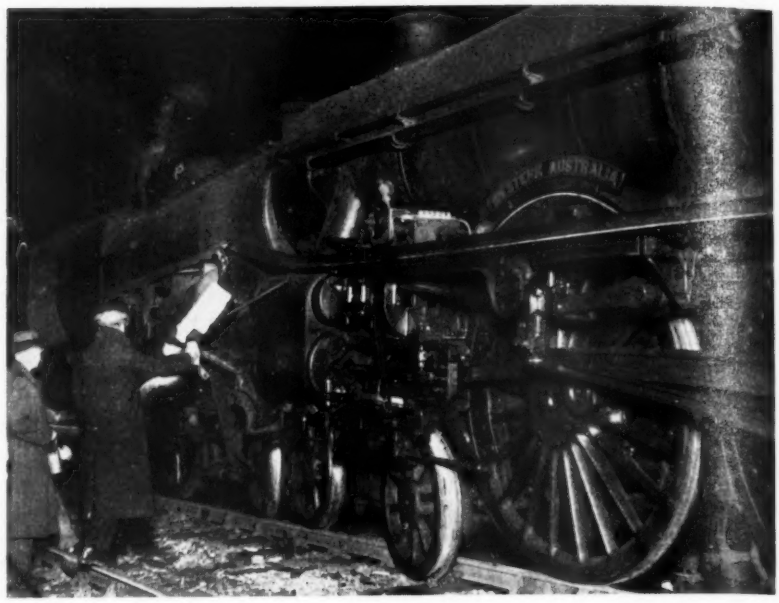
cuit No. 886. He signalled to Cox to move back and sent a messenger also. He had placed a detonator on the down fast line by means of a machine. "Entering section" was received at 3·1 p.m.; the collision occurred about a minute later. Finnerty endeavoured to maintain that he had not used bolt 22 when setting the road for the empty train for the second time, but other evidence and the circumstances show he must have done. He agreed that he made a grave mistake in disregarding Block Regulation 4, clauses (*a*) and (*f*), but said he had been able to change the road a few minutes previously and was surprised when he could not do so again. He overlooked the possibility of the empty train moving forward. Neither anticipating delay in getting the empty train to set back nor wishing to delay the express, which he thought should have no difficulty in stopping, he did not send "obstruction danger" when he found he could not set the road. The Block Regulations regarding blocking back are also involved in the case; Finnerty did not block back to either Bromham or Oakley station, but said he would have done so to the latter as soon as Cox moved forward, in preparation for the obstruction of the up line; he did not consider it necessary to do so to Bromham as the movement was not intended to come to a stand on the down line.

Driver H. J. Hudson, of the express, estimated his speed at 70 m.p.h. at Bromham viaduct. He did not see the down distants until leaving its girder span, 260 yd. Reminded that he could have seen them below the steelwork 60 yd. sooner he could give no explanation of his failure to do so. He admitted that he never expected to be stopped at Oakley junction and would have been less surprised by a check at Bedford. He knew the distance between distant and home signals was rather shorter than usual and was aware that it had been suggested to increase it. On seeing the distant signals he applied the brake fully and saw the home signals were also "on." He did not complain of the brakes but realised the train would not stop at the home signals, so sanded and whistled, hoping the main line home would be lowered. He did not reverse. Speed had fallen to 25 m.p.h. when he entered the branch.

Fireman F. McLeen said Hudson made a full brake application but could not say where. Guard Scoffield knew the road well. Feeling the brake at the viaduct he observed the distant signals and applied his hand brake, but did not observe the vacuum gauge.

Inspecting Officer's Conclusions

The accident resulted from a series of errors on the part of Signalman Finnerty, followed by Driver Hudson's failure to obey signals, nor would it have occurred had Guard Turner acted more expeditiously. Finnerty first failed to block back to Bromham when he set the road for the branch. This would not have prevented the express being offered, but the "train on line" indication might have reminded him to re-set the facing points before accepting it. His acceptance of the express with the over-run occupied was inexcusable, as was his failure to remedy the blunder when unable to re-set the points. Had he acted promptly the express could have been stopped at Bromham. His statement about not bolting the points is clearly incorrect. He could have used the sealed release on the bolt lever, as a last resort, but admittedly the instructions say it is only to be used with the track circuit clear. Either he lost his head, or hoped to conceal his wrong acceptance of the express and avoid the inquiries which must have followed "obstruction danger" or use of the release. His excuse that he expected the express to stop showed an entire disregard of the safety principles in the regulations. His contravention of them is a most serious



The two locomotives after the Oakley junction collision. That in the foreground is the express engine

Wrecked coaches of the empty train after the collision

matter, and responsibility must mainly be borne by him.

Investigation shows that tight compression of buffers in the first instance would account for Cox's inability to move clear of track circuit No. 886 when setting back again. It also shows that either Hudson did not apply the brake *fully* at first or speed must have been substantially above the 70 to 75 m.p.h. estimated by witnesses Tests made recently show that with a seven coach train, equipped with standard brake gear, corresponding almost exactly with the one involved in the accident but having a slightly lower brake power ratio (72·75 per cent.), emergency stops should be made on a 1 in 330 falling grade as follows:—

Speed	Distance
70 m.p.h.	922 yd.
75 ,, ...	1,069 yd.
80 ,, ...	1,238 yd.
85 ,, ...	1,413 yd.

"Service" braking distances are naturally greater, *e.g.*, 1,380 yd. for 75 m.p.h. on 1 in 330 falling, with standard equipment.

Hudson ought to have succeeded in stopping—if not at the home signal—within the available 1,341 yd. unless his speed was considerably over 70 m.p.h., even if the steam brake did not respond immediately owing to condensation. Unable to pick out the distants at long range, and presumably knowing their position had been criticised, it is surprising he did not take the earliest opportunity of observing them, 60 yd. sooner than he said he did. The violence of the collision suggests that his failure lies in his admission that he expected the home signal to be lowered for him to run forward to the starting signal, usual practice if block acceptance has not been received. Possibly the brake was not *fully* applied until he realised the signal was not going to be lowered for him. He was less alert than he should have been and must share responsibility for the accident. A man of 48, he has nine years driving experience and a good record.

The time taken over the shunting movements seems excessive. Delay was mainly due to Guard Turner walking to the box for instructions and then back to apply the hand brake. It is unfortunate he did not use the ground frame telephone. Scotching the wheels was hardly necessary, and while he cannot be blamed for excess of caution, nevertheless he unwittingly contributed to the events bringing the accident about.

Remarks and Recommendations

A longer view of the distant signals would probably have prevented the accident, so would "warning" type A.T.C. apparatus, acting a suitable distance in rear of them.

An addition to the standard brake equipment of a "direct admission valve" gave very good results in the tests above referred to. With this device, adopted some time ago by the Great Western Railway, air is admitted directly to the brake cylinders, in both service and emergency applications; this ceases when the vacuum in the brake cylinder has fallen to correspond to the train pipe vacuum. A more rapid application of the brakes is thus secured, the quantity of air entering the driver's valve and passing along the train pipe being limited to that needed to lower the train pipe vacuum by the desired amount. With the standard equipment all the air entering the brake cylinders for a service application has to pass through the driver's valve; in an emergency application additional air is admitted by the guard's application valves, if these are of the automatic type, but they were altered to a non-automatic pattern on this company's stock some years ago, being found apt to work erratically when a service application was made. A train equipped with direct admission valves has, to all intents and purposes, the equivalent of an improved pattern of automatic guard's application valve below each coach, responding moreover to both service and emergency applications. The "Coronation Scot" coaches are so equipped and all new rolling stock constructed for main line express services. It has been decided to fit the valves to existing express stock by degrees, having regard to the general increase in schedule speeds of express trains this is commendable. It is to be hoped the work will be expedited as much as practicable.

As a clear view of the Oakley junction down distant signals is not obtainable, in daytime, at a greater range than 320 yd., the distance of 743 yd. from the home signals is inadequate, having regard to the falling gradient and the high speeds often attained by express trains, the emergency and service braking distances at a speed of 75 m.p.h. on a 1 in 330 falling gradient being 1,069 and 1,380 yd. respectively.

STAFF AND LABOUR MATTERS

L.N.E.R. Superannuation Fund Consolidation

The Railway Review announces arrangements by the London & North Eastern Railway in regard to the consolidation of the constituent companies' superannuation funds. We are officially advised that satisfactory negotiations have been proceeding between the company and representatives of the staff and that it is hoped to introduce in the autumn an agreed Bill to obtain the necessary statutory powers.

The London & North Eastern Railway took over heavy obligations in regard to the superannuation and pension funds of the old constituent companies, and the possibility of forming a consolidated fund including both the members of these funds and those members of the staff joining the service since 1923 has been repeatedly under consideration. The difficult financial conditions which have prevailed during the past fifteen years have made it impossible for the directors to add to their commitments on a large scale, but it is understood that the trade unions representing the staff have put forward proposals which have made it easier to reach an agreed solution. The establishment of a consolidated fund should be a great advantage both to the company and to the staff, and the agreed provisions, which are at present being discussed in detail, are awaited with interest.

Strike at Inchicore

On September 6, owing to financial stringencies, the Great Southern Railways Company gave notice that the locomotive works in the Dublin area would be closed for two weeks on and from September 12, and on and from that date all other workers employed on shop conditions would be employed on a three-day a week basis. This gave rise to meetings by the men, who objected to the notices, and as a result of the discussions which took place between the company, the unions, and the Ministry of Industry and Commerce it was agreed to postpone operation of the notices for one week. Subsequently, at the request of the Ministry of Industry and Commerce, the company agreed to postpone the closing of the works in the Dublin area for two weeks until later in the year. A further offer was made by the company to give seven full weeks' work between September 19 and the end of the year. On Sunday, September 18, the men threatened to strike and some of them had actually gone on unofficial strike. A ballot was held and it was decided, by a large majority, to strike. The men withdrew their labour on Monday, September 19, in the Inchicore shops and a strike is actually in operation. Further discussions are proceeding. The strike so far is confined to men working in shop conditions. The running of trains, buses, and lorries is not at the moment affected.

NORTH-EASTERN AIRWAYS AIR MAIL SERVICE.—A new internal air mail service will begin on October 3, North-Eastern Airways Limited having been awarded a contract by the Postmaster-General for the carriage of mails from Perth, Newcastle (picking up mail sent by train from Edinburgh), Yeadon (serving Leeds and Bradford), and Doncaster to London. At Doncaster mails will be both dropped and collected, giving same-day delivery of mails from Scotland to the West Riding, and from the West Riding to London. Scottish mail will also be delivered in London on the day of posting. The postal service will operate similarly in the northbound direction.

XUM

NOTES AND NEWS

L.M.S.R. (N.C.C.) Traffics.—Traffic receipts of the Northern Counties Committee of the L.M.S.R. for the week ended September 9 were £7,610, a decrease of £310. The total for the 36 weeks was £269,920, a decrease of £18,470.

Head-on Collision on Southern Pacific Railroad.—The eastbound Californian express of the Union Pacific Railroad collided head-on with a westbound passenger train at Tortuga, near the Mexican border of California, on September 20. At least seven persons, including the driver and fireman of one train, are reported to have been killed, and 40 injured.

L.N.E.R. Edgware Trains.—The L.N.E.R. announces that on account of engineering work the line between Finchley and Edgware will be closed on Sunday next, September 25, from early morning until 7.30 p.m. The train service during the day will be replaced by motorbus services, which will be available for railway ticket holders only.

Peruvian Corporation Debentures.—First mortgage debenture holders of the Peruvian Corporation are to receive on October 1 interest of 2 per cent., this being the unpaid balance of the instalment of interest due April 1, 1935. After consultation with the debenture holders' committee the corporation has decided to petition the High Court to sanction a new scheme of arrangement, extending the operation of the existing scheme for a maximum further period of three years from December 31, 1938.

A.R.P. Committee's Report Postponed.—The publication of the report of Sir John Anderson's committee on the evacuation of the civil population from London in time of war has been postponed indefinitely. The report, which was referred to in THE RAILWAY GAZETTE of July 15 last, is ready for issue, but it was considered advisable, in present circumstances, to suspend its publication. Sir John Anderson's committee was set up on May 24, and its other members were Sir Percy Harris, Colonel Doland, and Dr. Haden Guest.

Engineering Lectures at the Mary Ward Settlement.—The Mary Ward Settlement has enlisted the aid of the recently-formed Engineering Public Relations Committee in the arrangement of a series of 12 engineering lectures, to be delivered at the Mary Ward Settlement, Tavistock Place, W.C.1, on Tuesdays, at 8.30, beginning on September 27. The first lecture is to be by Lt.-Colonel F. H. Budden, Public Relations Officer of the committee, who will deal with "The Engineer and the Community"; subsequent lectures will be given by other speakers, emphasising how engineers have contributed to the welfare of the community in the past, how they are planning for present development, and what may be the effect of such development on society in the future. The total cost of the series is 3s. 6d.; a complete syllabus may be obtained from the above address.

Korea-Peiping Through Service.—A Reuters message from Tokyo states that it has been arranged to institute a new through international train service between Fusan in Korea and Peiping *via* Mukden in Manchukuo as from October 1. The journey time will be about 39 hr.

Proposed Tyne Tunnel.—A deputation from the Corporations of Tynemouth and South Shields are to lay before the Minister of Transport, on September 26, plans for a Tyne tunnel to link North and South Shields, replacing the existing ferry services. An earlier proposal for a tube railway operated on the Kearney high-speed system to link these towns was recorded in our issue of March 5, 1937.

Delaware & Hudson Holdings.—The Delaware & Hudson Railroad recently announced that it had sold 90,000 shares of New York Central since the beginning of this year. Its holdings now total 320,000 shares, against the original 495,000 shares. Proceeds of the 1938 sales have been used to reduce bank loans to $5,166,000 (£1,033,200). They amounted to $10,113,000 (£2,022,600) at the end of 1937.

New L.M.S.R. Dredger Launched.—A new single-screw twin grab-hopper dredger, built for the L.M.S.R. by Ferguson Brothers Limited was launched at Port Glasgow on September 15. The dredger, named *Foulney*, is intended mainly for service at Barrow. Mrs. W. L. Sinclair, wife of Capt. W. L. Sinclair, Assistant Marine Manager, L.M.S.R., performed the naming ceremony, at which the following L.M.S.R. officers were present:—

Mr. J. Ballantyne (Chief Officer for Scotland), Capt. W. L. Sinclair (Assistant Marine Manager), Messrs. D. J. Harris (Superintendent Marine Engineer), T. H. Moffat (Secretary of Scottish Committee), A. H. McMurdo (Divisional Engineer, Glasgow), R. A. Riddles (Mechanical and Electrical Engineer, Scotland), and C. A. Bremner (Steamship Superintendent, Scotland).

The North Staffordshire Railway.—The Railway Club held the first meeting of the autumn session on September 8, at the Royal Scottish Corporation Hall, Fetter Lane, E.C., when Mr. J. Simmonds read a paper on the "Early History of the North Staffordshire Railway." Mr. Simmonds pointed out that little was known in the South of England of the North Staffordshire Railway, and its considerable size and importance were not realised. A description of the line and its position before amalgamation in 1923 was given, followed by an account of early schemes for railway development in the Potteries. With the aid of a map the lecturer traced the history of the railway up to the end of 1875, making special mention of the unique position with the Trent & Mersey Canal and the relations between the North Staffordshire Railway and its great neighbours which nearly led to absorption in 1874. Dealing with accidents, Mr. Simmonds remarked on the freedom which this railway enjoyed from fatal accidents.

Mitropa to Take Over Austrian Sleeping and Dining Car Services.—It is announced that with the introduction of the winter train services on October 2, the Mitropa Company will take over the sleeping and dining-car services in Austria, at present managed by the International Sleeping Car Company. The only Mitropa cars now working into Vienna are those on the through trains from Berlin and Cologne.

Seaford Branch, Southern Railway.—A new station, known as Bishopstone station and situated 73 chains from Seaford, will be brought into use on Monday next, September 26. The present Bishopstone halt will then be closed until Easter, 1939, and on its re-opening will be renamed Bishopstone Beach halt. From September 26 all trains booked to call at the existing halt will call instead at the new station.

First through wagon from Bulgaria *via* Train Ferry.—The first through ferry truck of the French National Railways from Bulgaria *via* the Dunkerque-Dover ferry service arrived in England last Friday. The truck, containing grapes, crossed the Bulgarian frontier on September 10, and delivery was effected at 4 a.m. on September 16 at Covent Garden in per condition.

Apsley New Station, L.M.S.R.—Yesterday the ceremonial opening took place of a new passenger station which has been built at Apsley, between King's Langley and Hemel Hempstead, Herts. An unusual feature of the ceremony was that the special train conveying the guests from London ran, on arrival at Apsley station, through a large hoop of paper manufactured in the mills of John Dickinson & Co. Ltd., which are adjacent. The opening ceremony was performed by Lord Stamp, Chairman L.M.S.R., in conjunction with Sir Reginald Bonsor Chairman of John Dickinson & Co. Ltd.

The Indian Pacific Locomotive Committee.—It is learned on good authority that very comprehensive arrangements have been made for the Pacific Locomotive Committee—which reached Bombay on September 1—to have ample opportunity for testing the running of "XA," "XB," and "XC" class engines at high speed over various patterns and weights of permanent way. The tests will include observations with the "XB" class as originally built and as later modified, and also with the most recent modifications, which include the incorporation of friction damping

devices for controlling any tendency to hunt and for steadying the engine while running at high speed. Varying conditions of wear in axleboxes and tyres, different strengths of side control springs, and alterations in wheelbase will also be considered. The committee's tour has begun with a visit to Southern India, and the members had plenty of time to study and discuss the drawings and complete technical details of the different classes of standard Pacific locomotive on the voyage out to Bombay.

National Advertisers visit Southampton.—On Wednesday a large party of "national advertisers" accepted the invitation of the Southern Railway Company to visit the Southampton Docks and view the position of the new advertising sites on the reclaimed land facing the main London-Bournemouth line near Southampton. The Southern Railway was represented by Mr. C. Grasemann, Public Relation and Advertising Officer; Mr. E. C. Short, Trade Advertising Agent; and Mr. J. W. Davenport. The party travelled by special train to and from Southampton and lunch was served on the down journey. During the afternoon the members of the party were taken on a cruise down Southampton Water and the Solent in the Southern Railway excursion steamer *Southsea*.

Flood Damages and Accidents in Northern Spain.—Northern Spain has experienced a series of violent storms, which have occasioned serious damage to railways, bridges, and roads, causing serious interruption to communications, with heavy damage to crops, according to a Reuters message. Near Mieres, south of Oviedo, a whole train, except one coach, toppled into a river, which overflowing its banks, had caused a subsidence of the permanent way. Many passengers were rescued by boats. Several bodies have been recovered, and it is feared the death-roll will be considerable. Ten people were killed and 30 injured when a bus taking pilgrims to Covadonga, skidded near Gijon and fell over a precipice.

British and Irish Traffic Returns

GREAT BRITAIN	Totals for 37th Week			Totals to Date		
	1938	1937	Inc. or Dec.	1938	1937	Inc. or Dec.
	£	£	£	£	£	£
L.M.S.R. (6,834¼ miles)						
Passenger-train traffic	544,000	540,000	+ 4,000	19,883,000	19,860,000	+ 23,000
Merchandise, &c.	437,000	518,000	− 81,000	16,585,000	18,062,000	−1,477,000
Coal and coke	235,000	250,000	− 15,000	9,113,000	9,343,000	− 230,000
Goods-train traffic	672,000	768,000	− 96,000	25,698,000	27,405,000	−1,707,000
Total receipts	1,216,000	1,308,000	− 92,000	45,581,000	47,265,000	−1,684,000
L.N.E.R. (6,315 mls.)						
Passenger-train traffic	350,000	350,000	—	12,873,000	12,971,000	− 98,000
Merchandise, &c.	294,000	349,000	− 55,000	11,560,000	12,423,000	− 863,000
Coal and coke	225,000	242,000	− 17,000	8,597,000	9,046,000	− 449,000
Goods-train traffic	519,000	591,000	− 72,000	20,157,000	21,469,000	−1,312,000
Total receipts	869,000	941,000	− 72,000	33,030,000	34,440,000	−1,410,000
G.W.R. (3,737 mls.)						
Passenger-train traffic	233,000	229,000	+ 4,000	8,365,000	8,447,000	− 82,000
Merchandise, &c.	185,000	207,000	− 22,000	6,788,000	7,323,000	− 535,000
Coal and coke	101,000	109,000	− 8,000	3,927,000	4,108,000	− 181,000
Goods-train traffic	286,000	316,000	− 30,000	10,715,000	11,431,000	− 716,000
Total receipts	519,000	545,000	− 26,000	19,080,000	19,878,000	− 798,000
S.R. (2,148 mls.)						
Passenger-train traffic	348,000	338,000	+ 10,000	12,486,000	12,559,000	− 73,000
Merchandise, &c.	65,000	70,000	− 5,000	2,224,000	2,320,500	− 96,500
Coal and coke	28,000	29,000	− 1,000	1,100,000	1,119,500	− 19,500
Goods-train traffic	93,000	99,000	− 6,000	3,324,000	3,440,000	− 116,000
Total receipts	441,000	437,000	+ 4,000	15,810,000	15,999,000	− 189,000
Liverpool Overhead (6¼ mls.)	1,261	1,326	− 65	51,040	48,427	+ 2,613
Mersey (4½ mls.)	4,528	4,201	+ 327	161,658	154,729	+ 6,929
*London Passenger Transport Board	567,100	559,800	+ 7,300	6,709,700	6,670,000	+ 39,700
IRELAND						
Belfast & C.D. (80 mls.) pass.	2,663	2,536	+ 127	98,488	102,068	− 3,580
" " goods	487	512	− 25	15,941	18,077	− 2,136
" " total	3,150	3,048	+ 102	114,429	120,145	− 5,716
Great Northern (543 mls.) pass.	13,000	12,700	+ 300	420,750	425,150	− 4,400
" " goods	8,750	9,800	− 1,050	325,950	349,500	− 23,550
" " total	21,750	22,500	− 750	746,700	774,650	− 27,950
Great Southern (2,076 mls.) pass.	42,789	40,967	+ 1,822	1,399,845	1,400,722	− 877
" " goods	40,873	39,294	+ 1,579	1,440,522	1,494,498	− 53,976
" " total	83,662	80,261	+ 3,401	2,840,367	2,895,220	− 54,853

* 12th week (before pooling)

British and Irish Railway, Stocks and Shares

Stocks	Highest 1937	Lowest 1937	Prices Sept. 21, 1938	Prices Rise/Fall
G.W.R.				
Cons. Ord. ..	67⅝	55¾	34	+½
5% Con. Prefce. ...	127	108	89	+1
5% Red. Pref. (1950)	113	109	99½	—
4% Deb.	113⅝	102½	103½	—
4½% Deb.... ...	118	106	107½	—
4½% Deb.	124½	112	111½	—
5% Deb.	136½	122¾	124½	−1
2½% Deb.... ...	76	64	66½	—
5% Rt. Charge ...	133⅞16	118	118½	—
5% Cons. Guar. ...	133¾	116½	108½	+2
L.M.S.R.				
Ord.	36⅛	25⅜	13	+½
4% Prefce. (1923)	82½	65¾	27½	—
4% Prefce. ...	92½	77¾	51½	+1
5% Red. Pref. (1955)	107¾	102	72½	—
4% Deb.	108	99¼	96½	—
5% Red. Deb. (1952)	117½	111	111½	—
4% Guar. ..	104	95⅞	88½	+2
L.N.E.R.				
5% Pref. Ord. ...	12½	6¾	4	—
Def. Ord.	6¼	3⅝	2⅝	—
4% First Prefce.	79½	63	25½	—
4% Second Prefce.	31½	21	10½	—
5% Red. Pref. (1955	101¼	89¾	44½	—
4% First Guar. ...	103	91⅞	78½	+2
4% Second Guar.	97⅝	85½	57½	—
3% Deb.	84⅛	74	68½	+2
4% Deb.	107¼	98½	90½	−1
5% Red. Deb. (1947)	113½	106½	105½*	−2
4½% Sinking Fund Red. Deb.	110⅜16	105½	106	—
SOUTHERN				
Pref. Ord.... ...	98⅝	83½	50½	+1
Def. Ord.	27⅞	16¾	11¾	+½
5% Pref.	126⅛16	105⅜16	89	+1
5% Red. Pref. (1964)	118	110¼	100½	—
5% Guar. Prefce.	133¾	116¾	112½	—
5% Red. Guar. Pref. (1957)	118½	111½	111½	—
4% Deb.	112	101¼	103½	—
5% Deb.	135¾	123½	123½	—
4% Red. Deb. 1962–67	113	105	106½	—
BELFAST & C.D.				
Ord.	5	4	4	—
FORTH BRIDGE				
4% Deb.	106	99½	100½	—
4% Guar. ...	105¾	99	99½	—
G. NORTHERN (IRELAND)				
Ord.	11	5	2¾	−¼
G. SOUTHERN (IRELAND)				
Ord.	50	21½	20	—
Prefce.	61	34	13¼	—
Guar.	94¾	69½	35	+½
Deb.	95	82⅛	58	—
L.P.T.B.				
4½% "A" ...	123¾	110½	113½	−1
5% "A" ...	135	121½	122½	−2
4½% "T.F.A." ...	108¾	104	105	—
5% "B" ..	125	114½	117½	—
"C"	99¾	75	78½	+1
MERSEY				
Ord.	42⅝	22	20	—
4% Perp. Deb. ...	103	96¾	99	—
3% Perp. Deb. ...	77⅝	74½	73½	—
3% Perp. Prefce.	68¾	61¼	62½	—

* ex dividend

RAILWAY AND OTHER REPORTS

Southdown Motor Services Limited.—The interim dividend is 5 per cent., less tax, the same as a year ago.

Potteries Motor Traction Co. Ltd.—An interim dividend of 4 per cent., less tax, has been declared, the same as a year ago.

Vickers Limited.—The directors give notice that an interim dividend of 4 per cent., less income tax at 5s. 6d. in the £, on the ordinary stock of the company in respect of the year 1938 will be paid on Wednesday, October 12, 1938.

Shahdara (Delhi) Saharanpur Light Railway Co. Ltd.—For the half-year to March 31 last gross earnings were Rs. 5,28,998, a decrease of Rs. 55,774 on the corresponding period in 1936-37. Working expenses were Rs. 1,96,998 plus Rs. 42,500 set aside to depreciation reserve, making a total of Rs. 2,39,498, a decrease of Rs. 18,858. Net earnings were, therefore, Rs. 36,916 lower, at Rs. 2,89,500. The sum of Rs. 25,000 is transferred to reserve and the dividend for the half-year is at the rate of 10 per cent. per annum. less tax, leaving Rs. 2,75,039 to be carried forward.

Bolivia Railway Company.—Net earnings for the half-year to June 30 last are sufficient to pay interest of 0·514 per cent. on and after October 1 on the 5 per cent. mortgage and collateral trust income bonds (series A). This compares with 0·448 per cent. for the corresponding half-year of 1937. The balance required to enable interest of 1½ per cent. (6s. on each £20 bond) to be paid on the bonds in respect of the half-year has been provided by the Antofagasta Railway Company. Holders of the old first mortgage bonds who have not accepted the plan of re-organisation will receive on October 1 interest at the rate of 0·625 per cent., or 2s. 6d. on each £20 bond.

Trans-Zambesia Railway Co. Ltd.—Gross receipts of the railway including the southern approach to the Zambesi bridge for the year 1937 were £154,472, against £149,991 in 1936, and working expenses rose from £99,913 to £103,275, leaving net receipts of £51,197 compared with £50,078. Working expenses in 1937, including the southern approach, the river service, and the amounts charged to renewals, were 66·65 per cent. of the gross receipts as compared with 66·51 per cent. in 1936. Total tonnage in 1937 was 74,495 tons, including 19,458 tons of general merchandise. This total compares with 81,498 tons in 1936, which included 18,997 tons of general merchandise. Passenger traffic brought in £15,052, compared with £15,001 in 1936, and goods traffic produced £127,482 against £120,937. The amount of £62,435 due from the Nyasaland Government under the guarantee has been received, and this with the balance of £61,653 brought down from revenue account covers interest and other charges and the £35,450 set aside for debenture redemption account.

British Insulated Cables Limited.—The interim dividend on the ordinary stock will again be 5 per cent.

Stewarts and Lloyds Limited.—Interim dividends for the half-year ended June 30, 1938, on the first, second, and third preference stocks will be paid on October 31.

Laycock Engineering Co. Ltd.—Trading profit for the year ended June 30, 1938, was £58,945, against £25,988 for the previous year. Net profit, after payment of directors' fees, providing £10,719 (against £6,388) for depreciation, and writing £3,826 off plant, amounted to £43,701, against £18,900. The directors have set aside £17,354, against £5,484, for taxation, and recommend a dividend of 7½ per cent., requiring £12,687, compared with 5 per cent. requiring £8,750, and propose to transfer £15,000 to general reserve, and to carry forward £9,616, against £10,957 brought in. For some years past the company and Tecalemit Limited have carried on business both as manufacturers and distributors of garage equipment. It has now been agreed that the company will confine itself to manufacture and Tecalemit to selling.

Craven Bros. (Manchester) Ltd.—The interim dividend in respect of the current year is to be raised from 5 to 7½ per cent. The final for 1937 was 10 per cent. The directors state that in paying an increased dividend account has been taken of the fact that output continues to increase, that there is no diminution in inquiries, and that orders on hand and in sight ensure the company being fully employed for the next 2½ years.

Southampton Docks Centenary

In view of the centenary on October 12 next of the laying of the foundation stone of Southampton Docks, the Southern Railway Company, in collaboration with the Southampton municipal authorities, proposes to celebrate the occasion by a week of festivities.

The programme will be opened by a service at St. Mary's Church on Sunday, October 9, when the Southampton Master Mariners' Club ("The Cachalots") have agreed that their annual seafarers' service should be enlarged to form part of the celebrations. The actual centenary day itself—October 12—will be marked by a programme at which the Southern Railway Company will act as host to a party of distinguished guests. The proceedings will include the inspection of an interesting exhibition in the buffet and waiting rooms between sheds 101 and 102 at the new docks, of models, paintings, etchings, and sketches arranged in chronological order to depict the history of Southampton as a port during the past one hundred years. This exhibition will be opened to the public free on Thursday, Friday, and Saturday, October 13-15. On October 12 the official guests will then be present at the unveiling ceremony of an 8 ft. 6 in. commemorative column bearing an inscribed bronze plate which is to be unveiled by Mr. R. Holland Martin, Chairman of the Southern Railway Company. The Royal Mail shipping organisation, which has used the port of Southampton continuously since 1843, will participate by lending its vessel, the *Asturias*, for a lunch to which some 350 guests of the Southern Railway have been invited. At the conclusion of the centenary week the Southern Railway will entertain 800 members of its clerical and supervisory staff of the Docks and Marine Department to a supper and entertainment on Saturday, October 15.

Forthcoming Events

Sept. 15-24.—Model Engineer Exhibition, at Royal Horticultural Hall, Vincent Square, London, S.W.1.

Sept. 19–26.—London Midland & Scottish Railway, at Euston Station. London & Birmingham Railway Centenary Exhibition.

Sept. 24 (*Sat.*).—Permanent Way Institution (Manchester-Liverpool), at Working Men's Club, St. Anne's Road, Blackpool, 3 p.m. "Concrete Practice and its Application to Railway Construction," by Mr. R. Blyth.

Sept. 28 (*Wed.*).—Institution of Locomotive Engineers (London), at Inst. of Mechanical Engineers, Storey's Gate, S.W.1, 6 p.m. "The Exhaust Steam Injector," by Mr. L. Kastner.

Permanent Way Institution (Leeds), at Quebec House, Quebec Street, 7.30 p.m. "Permanent Way Institution Convention in Germany, 1938," by Mr. W. A. Willox.

Sept. 29 (*Thurs.*).—Permanent Way Institution (Brighton), at Welfare Room, Eastbourne station, 6.45 p.m. Lecture and demonstration of the apparatus for semi-controlled shovel packing.

Sept. 30, (*Fri.*).—Permanent Way Institution (Hull), at New Lecture Hall, Paragon Station, 7 p.m. "Permanent Way Institution Convention in Germany, 1938," by Mr. W. A. Willox.

Oct. 4 (*Tues.*).—Institution of Automobile Engineers, at Royal Society of Arts, John Street, London, W.C.2, 7.45 p.m. Presidential Address by Mr. P. Kidner.

L.N.E.R. (York) Lecture and Debating Society, at Railway Inst., Queen Street, 6.45 p.m. "Commercial Engineering," by Mr. J. Taylor Thompson.

Forthcoming Meetings

Sept. 27 (*Tues.*).—**Trans-Zambesia Railway Co. Ltd.** (Annual General), 3, Thames House, Queen Street Place, E.C.4, at 11.30 a.m.

OFFICIAL NOTICES

Indian State Railways

APPLICATIONS are invited for an appointment in the Transportation (Traffic) and Commercial Departments of Indian State Railways.

Candidates must be British subjects of non-Asiatic domicile and must have been not less than 21 nor more than 25 years of age on the 1st August, 1938. They must either (*a*) have obtained a degree or other qualification as prescribed in the regulations or (*b*) have had not less than two years' practical training, as pupil or apprentice, in the Traffic Department of a British or Colonial Railway, following a sound general education.

Further particulars and Forms of Application may be obtained, on application by postcard, quoting Appointment 1/28 from the High Commissioner for India, General Department, India House, Aldwych, London, W.C.2. Last date for receipt of completed applications 14th October, 1938.

Bengal-Nagpur Railway Company Limited

THE Directors are prepared to receive Tenders for :—

180 STEEL AXLES.

Specification and Form of Tender can be obtained at the Company's Offices, 132, Gresham House, Old Broad Street, London, E.C.2, on or after 19th September, 1938.

A fee of 10s. will be charged for each copy of the Specification, which is *NOT* returnable.

Tenders must be submitted not later than Noon on Friday, 30th September, 1938.

The Directors do not bind themselves to accept the lowest or any Tender, and reserve to themselves the right of reducing or dividing the order.

By Order of the Board,
T. R. WYNNE,
Managing Director.

Universal Directory of Railway Officials and Railway Year Book

44th Annual Edition, 1938-39

This unique publication gives the names of all the principal railway officers throughout the world, together with essential particulars of the systems with which they are connected. Much general and statistical information about railways is also concisely presented.

Price 20/- net.

THE DIRECTORY PUBLISHING CO. LTD.,
33, Tothill Street, London, S.W.1.

CONTRACTS AND TENDERS

Hudswell Clarke & Co. Ltd. has received an order from the Eagle Oil & Shipping Co. Ltd. for two 204-h.p. direct diesel locomotives for Argentina. These locomotives, which are for the 5-ft. 6-in. gauge, are fitted with Gardner 8-cylinder engines and have flameproof equipment.

De Dietrich et Cie has received an order from the Algerian Railways for one 600-b.h.p. diesel railcar. It is to be equipped with a Sulzer diesel engine.

The Crown Agents for the Colonies have recently placed the following orders :—

Chloride Electrical Storage Co. Ltd. : Accumulator spares.
The Phosphor Bronze Co. Ltd. : Axlebox and connecting rod brasses, axlebox liners, and copper ingots.
Pease & Partners Limited : Brake blocks.
T. Bolton & Sons Limited : Brass rods and cadmium copper wire.
British Insulated Cables Limited : Copper drawn conductors and flash welding equipment.
E. & E. Kaye Limited : Copper wire.
Spencer Wire Co. Ltd. : Copper wire.
Turners Asbestos Cement Company : Corr. asbestos roofing sheet.
W. T. Henley's Telegraph Works Co. Ltd. : Dry core cable.
General Electric Co. Ltd. : Electrical materials.
Self-Centering Expanded Metal Co. Ltd. : Expanded metal sheets.
Ferguson Pailin Limited : Extension switchgear for power station.
Stewarts and Lloyds Limited : Cast iron pipes and W.I. pipes.
Vernon & Co. Ltd. : Gauze.
J. Wilkes Sons & Mapplebeck Limited : H.D. copper wire.
Crown Spring Co. Ltd. : Helical springs.
I.C.I. Metals Limited : Locomotive copper plates.
Universal Steel Tube Co. Ltd. : Locomotive steel tubes.
Steel, Peech & Tozer Limited : Locomotive tyres.
Taylor Bros. & Co. Ltd. : Locomotive tyres and steel tyres.
Whitehead Iron & Steel Company : Mild steel.
P. & W. Maclellan Limited : M.S. angles, bars, plates, and steelwork for bridge.
Vacuum Oil Co. Ltd. : Oil.
Thos. Turton & Sons Limited : Steel bars.
Appleby-Frodingham Steel Co. Ltd. : Steelwork.
English Drilling Equipment Co. Ltd. : Undercarriage and casing blocks.
Braithwaite & Co. (Engrs.) Ltd. : Water tanks and towers.

New Zealand Government Railways 1938-39 Programme

As part of the 1938-39 programme of construction, the administration of the New Zealand Government Railways has placed the following orders :—

Vulcan Foundry Limited : Component parts for 15 Class "K.A." locomotives, £5,235 a set. £78,525.
J. Stone & Co., Ltd. : Train lighting equipment, £23,228.
South Durham Steel & Iron Co. Ltd. : 1,000 steel chequered plates, £2,169.
Guest, Keen & Baldwin Limited : 1,000 steel chequered plates, £2,169.
Consett Iron Co. Ltd. : 1,000 steel chequered plates, £2,169.
Metropolitan-Cammell Carriage & Wagon Co. Ltd. : Mild steel plates and stanchions in wagon sets, £17 15s. 0d. a wagon set, £13,312.
Smith & Maclean, Glasgow : Mild steel plates, £1,877.
Steel Company of Scotland : Mild steel plates, £2,809.
Dorman, Long & Co. Ltd. : Mild steel plates, £934.
Flexo Plywood Industries : Metal-faced plywood panels for railway coaches, £1,726.

The Associated Equipment Co. Ltd. has received an order from the London Passenger Transport Board for 115 Regent oil-engined double-decked chassis. A.E.C. vehicles owned by the board now total 5,889. The A.E.C. has also received a repeat order from the Great Northern Railway (Ireland) for four Regent vehicles.

The Madras & Southern Mahratta Railway Administration has placed the following orders to the inspection of Messrs. Rendel, Palmer & Tritton :—

George Salter & Co. Ltd. : 510 helical springs and 200 volute springs.
Taylor Bros. & Co. Ltd. : 294 steel tyres for locomotives.
Engineering & Metals Co. Ltd. : (agent for the American Rolling Mill Company, Middletown, Ohio) : 570 Arnco iron panelled plates.

W. Mumford Limited, of Plymouth, has received further orders from the Western National Omnibus Co. Ltd., and the Southern National Omnibus Co. Ltd., for the supply of motorbus and coach bodies. For the past two years this firm has supplied the whole of the bodies required by these two companies, and the orders have totalled about £80,000.

Clifford & Snell Limited

In the above firm's advertisement of Loudaphone communication equipment which appeared on page 78 of the L.M.S.R. Centenary Supplement to THE RAILWAY GAZETTE, dated September 16, the following words appeared: ". . . they provide incalculable service in the new L.M.S. diesel unit." This should have read ". . . they provide invaluable service in the new L.M.S. Diesel Unit."

Exports of Railway Material from the United Kingdom in August

	Aug., 1938	Aug., 1937	Eight Months Ending Aug., 1938	Aug., 1937
	£	£	£	£
Locomotives, rail	186,720	104,965	1,056,126	756,263
Carriages and wagons	145,643	214,299	2,172,699	2,088,644
Rails, steel	52,286	181,826	276,800	998,107
Wheels, sleepers, fishplates and miscellaneous materials	183,000	132,268	1,468,289	1,021,003

Locomotive and rail exports included the following :—

	Locomotives		Rails	
	Aug., 1938	Aug., 1937	Aug., 1938	Aug., 1937
	£	£	£	£
Argentina	5,442	10,424	6,644	4,097
Union of South Africa	—*	—*	26,858	7,335
British India	16,848	23,398	7,047	13,293

* Figures not available

XUM

Railway Share Market

Easing of tension in international affairs has resulted in firmer conditions in all sections of the stock and share markets, and since the commencement of the new Stock Exchange account on Monday, prices of most securities have been marked up, following the sharp reactions shown last week. The volume of business recorded some improvement, but it was again described as very moderate. Home railway stocks reflected the better general market conditions, but on Wednesday movements in prices were somewhat erratic following publication of the traffic figures. Nevertheless, there are continued hopes that traffics will show an improved tendency as from next month, and, in most cases guaranteed and debenture stocks are regarded as moderately valued at current prices. The latter, however, can hardly be expected to show any strong recovery in the more immediate future unless the surrounding trend of markets is favourable.

Southern deferred and preferred stocks have been more active at around 11½ and 50 respectively, sentiment being assisted by the increase shown in the past week's receipts. Anticipations of a dividend of at least 3 per cent. on the preferred stock will be much more widely held if the trend in traffics continues to be more encouraging. Great Western ordinary rallied to 34½, but later receded to 34, while L.M.S.R. ordinary, which touched 13 earlier in the week, later reacted to 12¾.

L.N.E.R. guaranteed issues showed improvement, the firsts to 79½ and the seconds to 57½, while Great Western 5 per cent. guaranteed was better at 109. Great Western 5 per cent. preference and Southern 5 per cent. preference stocks were both more active around 90½. L.M.S.R. 4 per cent. and 4 per cent. 1923 preferences were not unresponsive to the better trend, while fractional gains were recorded by L.N.E.R. first and second preference stocks. Debentures were in better request and were also aided by the recovery in gilt-edged securities. L.M.S.R. 4 per cent. debentures improved to 97½, and Great Western 4 per cents. to 103½, while Southern 4 per cents. were 104½ and L.N.E.R. 3 per cents. 68½. Elsewhere, Metropolitan stock was fractionally higher at 62, while demand was reported for London Transport "C," which improved to 76, pending the forthcoming dividend announcement.

Argentine and other foreign railway securities were again inactive, and very little attention was given to the debentures of the leading companies. Preference stocks were also neglected, the disposition being to await the preference dividend decisions of B.A. Gt. Southern and B.A. Western. Slightly better prices ruled for the ordinary stocks of the two last named companies. Demand was reported for Cordoba Central first debentures at the higher level 47. In other directions Antofagasta ordinary made a moderately better price. American railroad stocks fluctuated rather sharply, but improved later. Canadian Pacific ordinary and preference responded to the hope that traffics will be more encouraging during the next few months, but, on present indications, it would seem doubtful if last year's payment of 2 per cent. on the preference stock can be maintained. French railway sterling bonds were moderately higher.

Traffic Table of Overseas and Foreign Railways Publishing Weekly Returns

	Railways	Miles open 1937 38	Week Ending	Traffics for Week: Total this year	Traffics for Week: Inc. or Dec. compared with 1937	No. of Weeks	Aggregate Traffics to Date: Totals: This Year	Aggregate Traffics to Date: Totals: Last Year	Aggregate Traffics to Date: Increase or Decrease	Shares or Stock	Prices: Highest 1937	Prices: Lowest 1937	Prices: Sept. 21, 1938	Prices: Yield (See Note)
				£	£		£	£	£					
South & Central America	Antofagasta (Chili) & Bolivia	834	18.9.38	11,850	– 4,290	38	564,060	625,420	– 61,360	Ord. Stk.	29	10¼	11	Nil
	Argentine North Eastern	753	17.9.38	11,582	—	12	129,535	123,854	+ 5,681	,,	18¼	6	4½	Nil
	Argentine Transandine	—	—	—	—	—	—	—	—	A. Deb.	93½	60	80	5
	Bolivar	174	Aug., 1938	3,900	900	35	30,150	45,600	– 15,450	6 p.c. Deb.	9½	5	8½	Nil
	Brazil	—	—	—	—	—	—	—	—	Bonds.	17	9	6	85/16
	Buenos Ayres & Pacific	2,806	17.9.38	71,030	– 8,561	12	816,938	925,373	– 108,435	Ord. Stk.	17⅛	5½	5	Nil
	Buenos Ayres Central	190	3.9.38	$128,800	– $2,800	10	$1,131,200	$1,451,600	– $320,400	Mt. Deb.	41½	18	13	Nil
	Buenos Ayres Gt. Southern	5,084	17.9.38	116,749	– 11,353	12	1,394,790	1,389,889	+ 4,901	Ord. Stk.	33¾	13½	11	Nil
	Buenos Ayres Western	1,930	17.9.38	39,330	– 9,057	12	425,681	536,974	– 111,293	,,	31¾	11¼	7½	Nil
	Central Argentine	3,700	17.9.38	110,096	– 24,861	12	1,179,096	1,580,411	– 401,315	,,	34¼	10¾	8	Nil
	Do.	—	—	—	—	—	—	—	—	Did.	20½	4½	3½	Nil
	Cent. Uruguay of M. Video	972	10.9.38	14,812	– 928	11	170,965	162,093	+ 8,872	Ord. Stk.	67/32	2	2	Nil
	Cordoba Central	1,218	—	—	—	—	—	—	—	Ord. Inc.	61¼	11½	2¾	Nil
	Costa Rica	188	June, 1938	31,369	+ 318	52	314,399	249,333	+ 65,066	Stk.	38	27	25	8
	Dorada	70	Aug., 1938	17,600	+ 700	35	132,200	122,400	+ 9,800	1 Mt. Db.	107	106	105	511/15
	Entre Rios	810	17.9.38	15,918	+ 1,067	12	180,135	166,976	+ 13,159	Ord. Stk.	197/16	6	5	Nil
	Great Western of Brazil	1,092	17.9.38	6,400	– 700	38	238,900	271,200	– 32,300	Ord. Sh.	5¼	1⅛	1¼	Nil
	International of Cl. Amer.	794	July, 1938	$444,329	+ $26,759	31	$3,454,817	$3,543,958	– $89,141	—	—	—	—	—
	Interoceanic of Mexico	—	—	—	—	—	—	—	—	1st Pref.	2/-	1/-	1½	Nil
	La Guaira & Caracas	22¾	Aug., 1938	5,090	+ 10	35	40,670	43,200	– 2,530	Stk.	8½	6	8½	Nil
	Leopoldina	1,918	17.9.38	28,200	+ 1,843	38	750,013	870,740	– 120,727	Ord. Stk.	9¼	3	1½	Nil
	Mexican	483	14.9.38	$239,300	– $99,100	11	$2,844,400	$3,346,200	– $501,800	,,	1½	1¼	1⅛	Nil
	Midland of Uruguay	319	Aug., 1938	8,857	+ 1,799	9	17,539	14,699	+ 2,840	,,	1⅞	1½	1½	Nil
	Nitrate	386	15.9.38	4,021	– 3,639	37	105,183	113,641	– 8,458	Ord. Sh.	3¹¹/16	2	1⅞	5⁵/16
	Paraguay Central	274	10.9.38	$2,869,000	+ $336,000	11	$33,564,000	$36,222,000	– $2,658,000	Pr. Li. Stk.	84	79¼	57½	5⁵/16
	Peruvian Corporation	1,059	Aug., 1938	73,687	– 18,900	9	147,742	173,721	– 25,979	Pref.	14⅝	4½	2½	Nil
	Salvador	100	10.9.38	¢10,350	+ ¢750	11	¢125,776	¢125,059	+ ¢717	Pr. Li. Db.	23½	21½	22½	Nil
	San Paulo	153½	11.9.38	29,006	+ 1,342	37	1,157,440	1,196,193	– 38,753	Ord. Stk.	98½	56	33½	11⁵/16
	Taltal	160	Aug., 1938	2,710	– 1,845	9	6,220	7,495	– 1,275	Ord. Sh.	17/16	11/16	5/8	13⁵/16
	United of Havana	1,353	17.9.38	18,730	– 4,143	12	193,800	212,185	– 18,385	Ord. Stk.	58⅜	31/32	1	Nil
	Uruguay Northern	73	Aug., 1938	904	+ 103	9	1,783	1,593	+ 190	Deb. Stk.	10	2	2	Nil
Canada	Canadian National	23,754	14.9.38	838,755	+ 8,812	37	24,074,174	27,206,754	– 3,132,580	—	—	—	—	—
	Canadian Northern	—	—	—	—	—	—	—	— 4 p.c.	Perp. Dbs.	77	62½	63½	65/16
	Grand Trunk	—	—	—	—	—	—	—	—	4 p.c. Gar.	101⅞	94½	98½	4¹/16
	Canadian Pacific	17,186	14.9.38	699,400	+ 52,800	37	18,317,600	19,408,000	– 1,090,400	Ord. Stk.	18	7¼	6	Nil
India†	Assam Bengal	1,329	20.8.38	37,672	+ 83	20	529,885	504,012	+ 25,873	Ord. Stk.	86	73½	73	4½
	Barsi Light	202	31.8.38	2,730	– 120	22	62,970	57,262	+ 5,708	Ord. Sh.	66½	46	57½	6¹⁵/16
	Bengal & North Western	2,116	31.8.38	62,783	– 1,402	22	1,179,879	1,258,484	– 78,605	Ord. Stk.	317	301	280½	6⁷/16
	Bengal Dooars & Extension	161	10.9.38	4,448	– 463	23	61,552	61,728	– 176	,,	100	84	84½	7⅛
	Bengal-Nagpur	3,288	31.8.38	175,800	– 7,961	22	2,851,338	2,907,229	– 55,891	,,	101	89	91	4⅝
	Bombay, Baroda & Cl. India	3,085	10.9.38	224,100	+ 16,650	23	3,818,700	3,903,225	– 84,525	,,	113	110½	106½	5⅝
	Madras & Southern Mahratta	2,967	31.8.38	134,175	– 1,291	22	2,362,948	2,247,554	+ 115,394	,,	110	105	102½	8⅝
	Rohilkund & Kumaon	546	31.8.38	11,849	+ 220	22	236,741	240,574	– 3,833	,,	314	302	293½	6¼
	South Indian	2,531¾	31.8.38	124,477	– 707	22	1,748,793	1,747,351	+ 1,442	,,	103½	99½	100½	4¾
Various	Beira-Umtali	204	July, 1938	81,454	– 15,948	44	864,515	774,298	+ 90,217	—	—	—	—	—
	Egyptian Delta	620	31.8.38	6,214	– 482	22	84,439	89,864	– 5,425	Prf. Sh.	31/-	5¼	5¼	Nil
	Kenya & Uganda	1,625	Aug., 1938	182,150	– 14,527	35	1,860,357	1,920,155	– 59,798	—	—	—	—	—
	Manila	—	—	—	—	—	—	—	—	B. Deb	48⅛	43½	42½	8¼
	Midland of W. Australia	277	July, 1938	13,243	+ 2,998	5	13,243	10,245	+ 2,998	Inc. Deb.	98	93½	91½	4⅝
	Nigerian	1,900	6.8.38	24,233	– 7,487	19	561,793	932,816	– 371,023	—	—	—	—	—
	Rhodesia	2,442	July, 1938	379,510	– 32,890	44	4,122,769	3,764,458	+ 358,311	—	—	—	—	—
	South Africa	13,263	10.9.38	622,163	– 19,212	24	14,366,082	14,808,280	– 442,198	—	—	—	—	—
	Victoria	4,774	May, 1938	849,379	+ 26,441	48	9,015,865	9,342,068	– 326,203	—	—	—	—	—

NOTE.—Yields are based on the approximate current prices and are within a fraction of 1/16

† Receipts are calculated @ 1s. 6d. to the rupee § ex dividend

The variation in Sterling value of the Argentine paper peso has lately been so great that the method of converting the Sterling weekly receipts at the par rate of exchange has proved misleading, the amount being overestimated The statements are based on the current rates of exchange and not on the par value